NAVSHIPS 93148

INSTRUCTION BOOK
FOR
MODEL 1301 AND 1302
SPECIAL PURPOSE RECEIVERS

RECEIVER SET, COUNTERMEASURES
NAVY MODEL
R-839/FLR-2

TEMPORARY CORRECTION T-2 to TECHNICAL MANUAL FOR COUNTERMEASURES RECEIVERS R-839/FLR-2, R-839A/FLR-2, R-839B/FLR-2, R-839C/FLR-2 NAVSHIPS 93148

This temporary correction revises the manual to reflect the equipment changes made by Field Change 1-R-839/FLR-2, 1-R-839A/FLR-2, 1-R-839B/FLR-2, 1-R-839C/FLR-2. The purpose of this field change is to modify the Countermeasures Receivers referenced and minimize interaction between the video output and the audio level. This field change applies to all Countermeasures Receivers R-839/FLR-2, R-839A/FLR-2, R-839B/FLR-2, and R-839C/FLR-2.

When this change is included in the manual, the manual shall cover the equipments as though field change 1-R-838( )/FLR-2 had been accomplished on the equipments. This correction does not supersede any other corrections or changes.

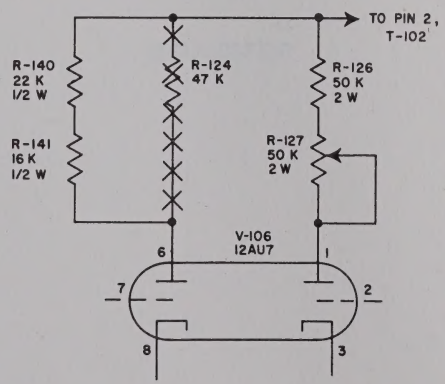
Maintenance Support Activities shall make this correction immediately but shall keep the superseded data intact for support of equipment that have not been modified.

Holders of equipment accompanied by technical manuals shall not make this correction in the manual until accomplishment of the field change.

Make the following pen-and-ink corrections. Insert this temporary correction in the technical manual immediately after the front cover and preceding T-1.

On Figure 4-8, Model 1301 Receiver Schematic Diagram: Delete "R124, 47k" and insert "R140, 22k" and "R141, 16k" connected in series as shown in figure 1 of this correction.

Figure 1



Record this action on RECORD OF CORRECTION MADE page.

This Technical Manual correction material was originally published as part of Field Change 1-R-839( )/FLR-2 which appeared in EIB 557 dated 27 March 1961.

TEMPORARY CORRECTION T-1 TO TECHNICAL MANUAL FOR RECEIVER SET, COUNTERMEASURES NAVY MODEL R-839/FLR-2 NAVSHIPS 93148.

The purpose of this temporary correction is to indicate a change in the Navy Model number of the equipment and to indicate technical revisions contingent on the change.

All references to: RECEIVER SET COUNTERMEASURES NAVY MODEL R-839/FLR-2, should be changed to read: RECEIVER SET COUNTERMEASURES NAVY MODEL R-839A/FLR-2.

Make the following corrections in the supplement, where indicated:

PAGE NO.	CHANGE IN EFFECT	LOCATION	ACTION
3-19	T-1	following L-211	Add L-212 and L-213 as listed below:

L-212- NOT USED

L-213- COIL, RADIO FREQUENCY: 1 winding; single layer wound, 22 turns, close wound, # 26 AWG "soldereze" wire; 2.6μh; iron coil form, 0.156 in dia x 0.500 in lg excluding terminals; 2 wire-lead type terminals; MEMS-CLARKE part/dwg no. A-16, 625.

Insert this temporary correction in the technical manual immediately after the front cover.

WARNING

This equipment employs voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution should be exercised while working with this equipment.

NAVSHIPS 93148

PART I

INSTRUCTION BOOK

FOR

MODEL 1301 AND 1302

SPECIAL PURPOSE RECEIVERS

RECEIVER SET, COUNTERMEASURES

NAVY MODEL

R-839/FLR-2

AND

PART II

REFERENCE DATA SUPPLEMENT

NEMS-CLARKE COMPANY
A Division of Vitro Corporation of America
SILVER SPRING, MARYLAND

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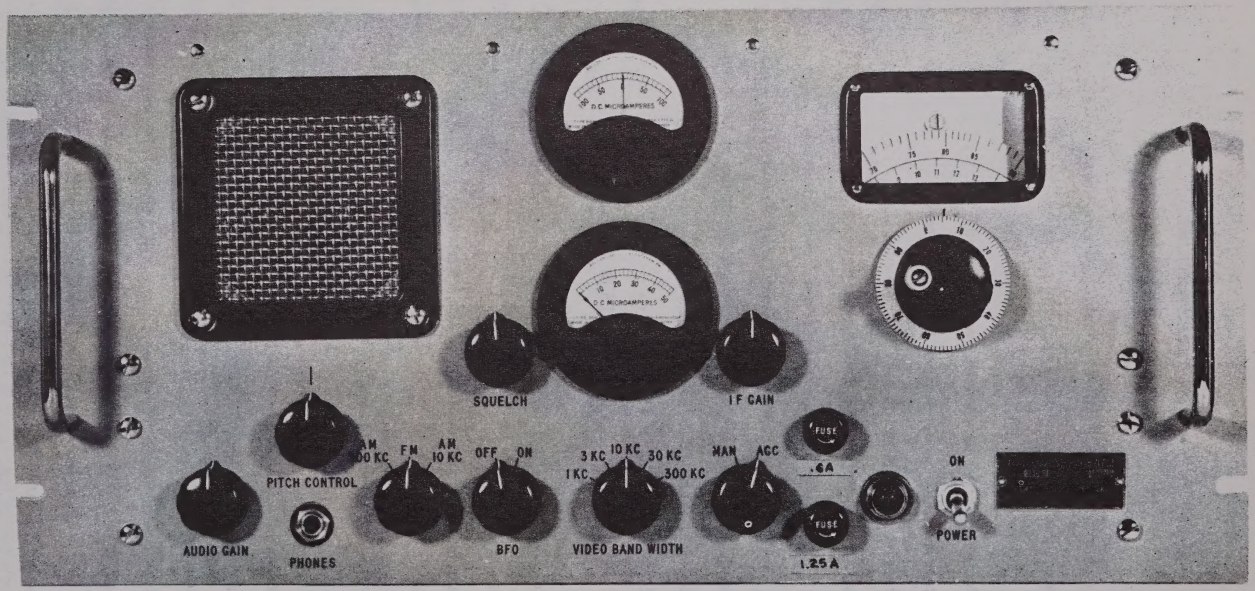


Fig. 1-1. Models 1301 and 1302 Special Purpose Receivers, Front View

PERFORMANCE SPECIFICATIONS

	Model 1302	Model 1301
Tuning Range	55-260 mc	55-260 mc
IF Rejection	70 db, minimum	70 db, minimum
Image Rejection	60 db, minimum	40 db below 130 mc. 30 db min. at any frequency.
Noise Figure	6 db, maximum	11.5 db, maximum
Absolute Sensitivity Measured without band-restricting filters	4 uv produces at least 23 db S/N with 100-kc deviation, 1 kc modulation frequency.	8 uv produces at least 23 db S/N ratio with 100-kc deviation, 1 kc modulation frequency.
IF Frequencies	21.4 mc and 1 mc	21.4 mc and 1 mc
IF Bandwidth	300 kc and 10 kc	300 kc and 10 kc
Outputs Provided	1. Signal--Wide band for supplying high-impedance load. 2. Monitor--Panel-mounted speaker, headphones, or 600 ohms balanced output for external use.	1. Signal--Wide band for supplying high-impedance load. 2. Monitor--Panel-mounted speaker, headphones, or 600 ohms balanced output for external use.
FM Output	0.10 volt per kc, approx.	0.10 volt per kc approx.
AM Outputs 300-kc and 10-kc strips	Approx. 10V RMS for 500 uv input modulated 50% at 1 kc.	Approx. 10V RMS for 5 mv input modulated 50% at 1 kc.
FM Output Stability	Varies less than 2 db for inputs above 1 uv.	Varies less than 2 db for inputs above 4 uv.
AM Output Stability Both IF strips	7 db maximum variation for 40-db variation in input.	7 db maximum variation for 40-db variation in input.
Input Impedance	Approx. 50 ohms	Approx. 75 ohms
Video Response	10 cps to 300 kc	10 cps to 300 kc
Video Bandwidth Control	5 positions--1, 3, 10, 30, and 300 kc	5 positions--1, 3, 10, 30, and 300 kc
Power Input	115/230 volts, 50 to 60 cps and 400 cps	115/230 volts, 50 to 400 cps
Power Consumption	127 watts	95 watts
Weight	40 lb.	37 lb.

Table 1-1. Performance Specifications

TUBE COMPLEMENT

Symbol	Type	Function
V-101	5R4WGY	Rectifier
V-102	OA2	Voltage regulator
V-103	OA2	Voltage regulator
V-104	6AL5	AGC delay diode
V-105	12AU7	Squelch
V-106	12AU7	1st video amplifier and tuning meter bridge
V-107	12AU7	Audio amplifier
V-108	12AU7	Video cathode follower output
V-201	416B	1st RF amplifier (used only on Model 1302 receiver)
V-202	6J4	2nd RF amplifier, Model 1302; 1st RF amplifier, Model 1301
V-203	6AK5	Mixer, 21.4 mc
V-204	6AF4A	Local oscillator
V-301	6DC6	1st IF amplifier, 21.4 mc
V-302	6DC6	2nd IF amplifier, 21.4 mc
V-303	6CB6	3rd IF amplifier AM; 1st limiter FM, 21.4 mc
V-304	6AK5	AM detector, AM; 2nd limiter FM, 21.4 mc
V-305	6AL5	Discriminator
V-306	6AU6	Crystal-controlled 2nd conversion oscillator, 22.4 mc
V-307	6BA6	1st IF amplifier, 21.4 mc
V-308	6AK5	Mixer, 1 mc
V-309	6BA6	IF amplifier, 1 mc
V-310	6AL5	AM and AGC detector
V-311	6CB6	BFO, 1 mc
V-312	6CB6	BFO, 21.4 mc

Table 1-2. Tube Complement

SECTION 1

GENERAL DESCRIPTION

1. PURPOSE OF EQUIPMENT.

The Models 1301 and 1302 Special Purpose Receivers have been specifically designed to meet the requirements of a highly stable, extremely sensitive AM-FM-CW receiver for critical application in the 55- to 260-mc range.

The receivers have self-contained power supplies and are capable of operation from a power source of 115/230 volts ± 10%, 50 to 60 and 400 cycles ± 5%, single phase, alternating current. Selection of primary voltage is accomplished by a two-position toggle switch located on the rear apron of the chassis. The switch is equipped with a locking device which prevents accidental switching from one voltage to the other.

Among the special features of the Models 1301 and 1302 receivers are audio squelch with adjustable threshold, FM reception with very low distortion, AM reception with selective IF bandwidths of 10 kc or 300 kc, BFO for CW reception, and a separate high-quality 600-ohm audio output. The video output signal passes through a variable low-pass filter, allowing a greatly improved S/N ratio when the full video bandwidth is not needed. High-level, low-impedance IF output from both IF amplifiers is made available on the rear apron of the chassis.

For further details concerning the capabilities and special features of the Models 1301 and 1302 receivers, see table 1-1, Performance Specifications.

2. DESCRIPTION OF EQUIPMENT.

The Models 1301 and 1302 receivers are 8-23/32 inches high by 19 inches wide by 16-7/8 inches deep. They each occupy approximately 1.62 cubic feet. The Model 1301 receiver weighs approximately 37 pounds, and the Model 1302 receiver weighs approximately 40 pounds. Panel and chassis are of aluminum construction, and the panel is finished in smooth gray enamel. The panel is designed for standard 19-inch relay-rack mounting, although the receivers are equipped with dust covers and louvered side panels, and may be used independently on a shelf or table. The IF amplifier and RF tuner are built as completely shielded subassemblies in both receivers, with most of the audio and video components mounted on a single terminal board on the underside of the main chassis.

Figure 1-1 shows a front view of the Models 1301 and 1302 receivers, and table 1-2 shows the tube complement. The difference in the two receivers lies primarily in the type of RF tuner employed, and the consequent mechanical and electrical differences are fully explained and illustrated in the appropriate sections of this book.

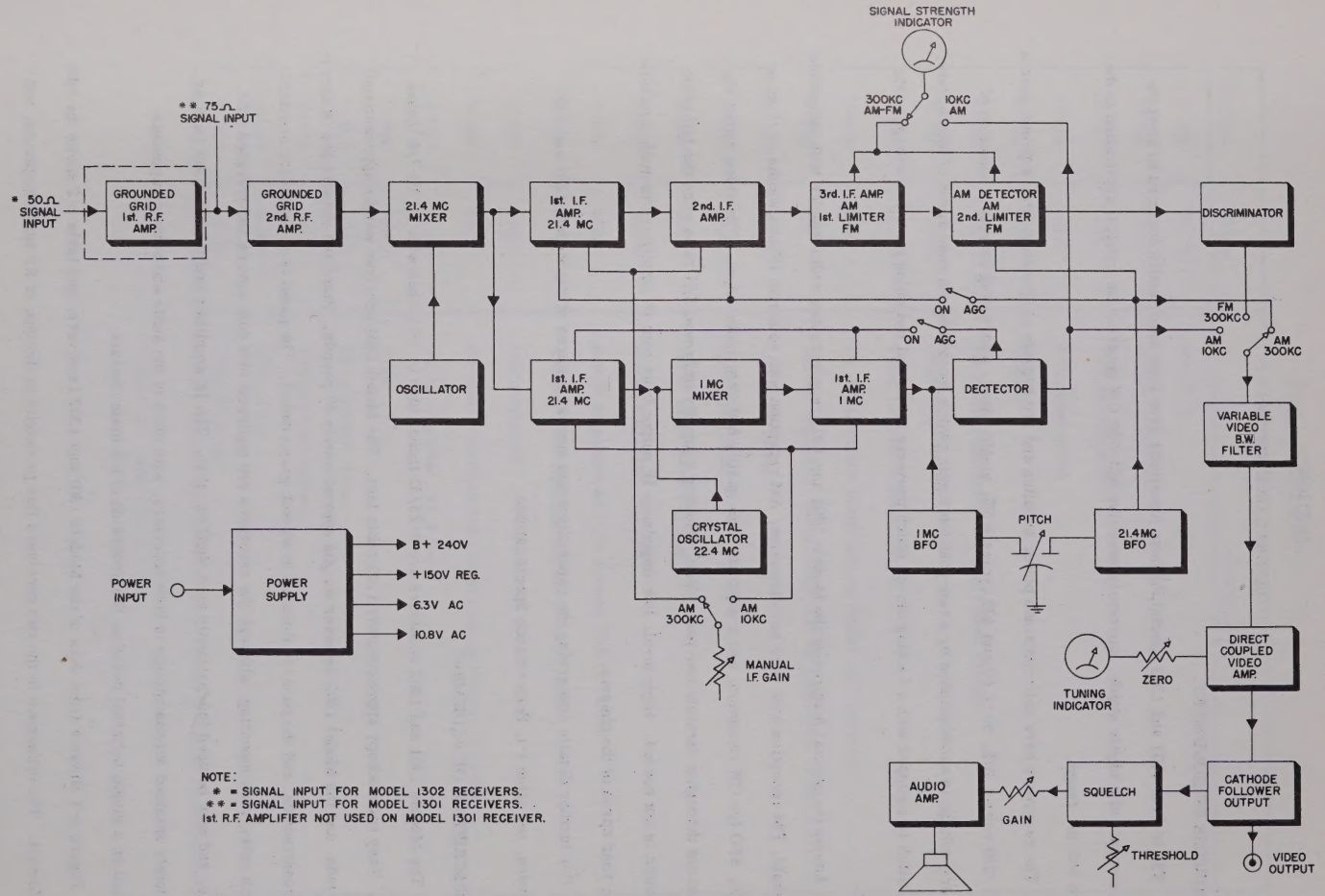


Fig. 2-1. Block Diagram, Models 1301 and 1302 Receivers

SECTION 2

THEORY OF OPERATION

1. ANALYSIS, MODELS 1301 & 1302 RECEIVERS.

a. A block diagram of the Models 1301 and 1302 receivers is shown in Figure 2-1. The circuit, with the function switch in the AM 300KC or FM position, is a single superheterodyne with an IF of 21.4 mc. With the function switch in the AM 10KC position, a dual-conversion circuit is used, with a 21.4-mc first IF, followed by a 1-mc second IF.

The tuner is designed to produce the lowest possible noise figure consistent with the type tube used (Model 1301 uses a 6J4 first RF amplifier, and Model 1302 uses a 416B first RF amplifier) and a practical tuning structure capable of tuning 55 to 260 mc, with reasonably uniform performance over the band.

The IF amplifier, with the function switch in the FM position, uses two stages of amplification, cascade limiters, and a phase-shift discriminator. With the function switch in the AM 300KC position, AGC voltage is applied to the first two stages, and the second limiter becomes the AM detector. With the function switch in the AM 10KC position, plate voltage is removed from the 21.4-mc IF amplifier and applied to the 1-mc dual conversion mixer and IF amplifier.

The output signal of the IF strips (AM 300KC, FM, or AM 10KC) is fed through a variable low-pass filter, thus providing the maximum S/N ratio when the full video bandwidth is not needed. The output of the filter drives a two-stage direct-coupled video amplifier with cathode follower output. A portion of the follower output drives a four-stage squelch-audio amplifier circuit.

2. MODEL 1301 RECEIVER ONLY.

a. ANTENNA.--The input impedance of the receiver is approximately 75 ohms over the frequency range of 55 to 260 mc. The input signal is applied through a type "N" coaxial receptacle located on the rear apron of the chassis. This is a UG-593/U connector.

b. RF STAGE.--The input signal is applied to the cathode of the 6J4 (V-202) grounded grid amplifier. The basic tuning element is a Mallory type S-4 spiral inductuner with the input circuit broadly tuned by the first section. The RF amplifier is operated at maximum gain at all times in order to produce the optimum S/N ratio.

The plate of the 6J4 is coupled to the grid of the 6AK5 (V-203) pentode mixer by a double-tuned bandpass filter. A capacity "T" is used to provide coupling between the primary and secondary tuned circuits. The shunt element of the "T" is adjustable, thus providing a control over the interstage bandwidth. A small iron-core inductor across the shunt element of the "T" network approaches parallel resonance at

55 mc, thus increasing the coupling at the low end and providing a more uniform coupling over the tuning range of 55 to 260 mc.

c. MIXER.--A 6AK5 pentode is used as a mixer. The oscillator signal is injected into the grid circuit, developing an operating bias proportional to the amplitude of the local oscillator signal. This causes a minimum effect on the receiver operation due to variations in local oscillator amplitude. A decoupled test point (TP-201) from a tap on the mixer grid resistors provides a convenient means for observing the response of the RF circuits.

d. LOCAL OSCILLATOR.--The local oscillator utilizes a 6AF4A tube in a modified Colpitts configuration. The end inductors are made of heavy straps to insure frequency stability. The frequency stability of the oscillator is very high due to the use of a high G_m tube which is loosely coupled to the high-Q tank circuit.

3. MODEL 1302 RECEIVER ONLY.

a. ANTENNA.--The input impedance of the receiver is approximately 50 ohms over the frequency range of 55 to 260 mc. The input signal is applied through a type "N" 50-ohm coaxial receptacle located on the rear apron of the chassis.

b. FIRST RF STAGE.--The input signal is applied to the cathode of the 416B low-noise planar triode. To prevent loss of input signal due to cathode-to-filament capacity, the filaments are kept above RF ground with broad-band chokes. The input resistance of the 416B is approximately equal to $\frac{2}{G_m}$ when $R_L = R_p$, and in this case is 40 ohms.

The cathode circuit is not tuned, due to the extreme bandwidth produced by the 40-ohm shunt load and the low cathode-to-ground capacity.

The plate tank circuit takes the form of a modified pie network and is used to couple the high-impedance plate circuit of the 416B tube to the low input impedance of the 6J4 grounded grid second RF amplifier.

c. SECOND RF STAGE.--The output of the pie network drives the cathode of the 6J4 grounded-grid second RF amplifier. A low-noise second stage is used so that the system noise figure (first RF, second RF, and mixer) is essentially that of the first stage.

The plate of the 6J4 is coupled to the grid of the 6AK5 pentode mixer by a double-tuned overcoupled band-pass filter. A capacity "T" is used to provide coupling between the primary and secondary tuned circuits. The shunt element of the "T" is adjustable, thus providing a control over the interstage bandwidth. A small iron-core inductor across the shunt element of the "T" network approaches parallel

resonance at 55 mc, thus increasing the coupling at the low end and providing a more uniform coupling over the tuning range of 55 to 260 mc.

The single-tuned high-Q plate circuit of the 416B tube is used to "fill in" the dip in the overcoupled interstage network. The overall RF response when viewed at the mixer grid test point is essentially flat over the band.

A convenient means for measuring the plate current of the 416B tube is made possible by TP-201 at the junction of R-201 and R-202, the cathode bias resistors. A VTVM at TP-201 will read the voltage drop across 100 ohms. Thus 2V equals 20 ma, 3V equals 30 ma, etc.

The filament of the 416B is operated from a 10.8-volt winding of T-101 through a total series dropping resistor of 4 ohms. This produces a self-regulating effect, which extends the tube life.

A blower motor mounted on the front-end subassembly is used to cool the 416B tube. The motor plugs into the main chassis with a 6-pin Jones plug. A jumper between pins 5 and 6 of the Jones plug removes plate voltage from the 416B when the motor is disconnected, thus protecting the tube.

Positive grid bias of 8 volts is applied from a voltage divider from the 150-volt regulated B+. This voltage is necessary to cancel the cathode self-bias voltage of 8.2 volts so that the tube will operate with approximately 0.2 volt bias. The d-c degeneration due to the large cathode resistor has a considerable stabilizing effect on the 416B tube and minimizes performance variations from one tube to the next if replacement becomes necessary.

If, for any reason, the grid bias voltage is shorted or removed, the plate current is reduced and the tube will not be damaged.

d. MIXER.--A 6AK5 pentode is used as a converter. The oscillator signal is injected into the grid circuit, developing an operating bias proportional to the amplitude of the local oscillator signal. This causes a minimum effect on the receiver operation due to variations in local oscillator amplitude. A decoupled test point (TP-202) from a tap on the mixer grid resistors provides a convenient means for observing the response of the RF circuits.

e. LOCAL OSCILLATOR.--The local oscillator utilizes a 6AF4 tube in a modified Colpitts configuration. The end inductors are made of heavy straps to insure frequency stability. The frequency stability of the oscillator is very high due to the use of a high G_m tube which is loosely coupled to the high-Q tank circuit.

4. MODELS 1301 & 1302 RECEIVERS (continued).

a. IF AMPLIFIER FUNCTION SWITCH IN FM POSITION.--The first IF transformer, located on the IF subassembly, is connected to the mixer plate through a short length of RG62/U coaxial cable. Two

high-gain stages (V-301, V-302) using 6DC6 tubes are followed by a 6CB6 (V-303) first limiter and a 6AK5 (V-304) second limiter. A 6AL5 (V-305) is used in a discriminator circuit of the phase-shift type. Accurate balance is obtained by using a bifilar winding for the secondary. An automatic gain control voltage is derived from the first limiter grid circuit and applied to the first IF amplifier. The first IF amplifier and the first limiter do not have their cathode resistors bypassed, thus causing cathode degeneration which practically eliminates the detuning caused by changes in tube input capacitance resulting from a change in the bias voltage. Such circuitry is not necessary in the second limiter due to the different tube structure and smaller change in grid bias. A minimum of approximately one volt bias is on the second limiter due to grid rectification of noise signals. A self-resonant choke is connected in the output lead of the discriminator to prevent IF signals from leaving the IF subassembly. A relative signal-strength meter with a logarithmic characteristic is operated from the voltage developed at the grids of the limiters.

b. IF AMPLIFIER FUNCTION SWITCH IN AM 300KC POSITION.--The first two high-gain 6DC6 remote cutoff amplifiers (V-301, V-302) receive an AGC voltage developed at the grid of the 6AK5 (V-304) AM detector. The third IF amplifier (V-303), which drives the AM detector, is not gain controlled, but its signal-handling capabilities have been improved by increasing the screen voltage. A self-resonant choke is connected in the AM output lead from the 6AK5 AM detector (V-304) to prevent IF signals from leaving the IF subassembly.

With the AGC switch in the manual position the AGC voltage is shorted to ground, and the IF gain control in the cathode circuit of the two 6DC6 IF amplifiers is unshorted and becomes operative. The gain-controlled stages use cathode compensation of input capacity variation with bias change.

The zero-center tuning meter operates only in the FM position. Correct tuning of an AM signal may be accomplished by first tuning in the signal with the selector switch in the FM position and then switching to the AM 300KC position.

The signal-strength meter, M-101, is not calibrated, though it may be used for a relative indication of of signal strength. The signal-strength meter is switched between the limiters or AM detector in the 300-kc-wide amplifier and the AM detector in the 10-kc-wide amplifier.

c. IF AMPLIFIER FUNCTION SWITCH IN AM 10KC POSITION.--Plate and screen voltages are removed from the 21.4-mc IF amplifier, and a 21.4-mc signal is capacitively coupled from T-302 to the grid of V-307, the 21.4-mc isolation amplifier preceding V-308, the 1-mc pentode mixer. The output of V-306, the 22.4-mc crystal-controlled 2nd conversion oscillator, is capacitively coupled to the grid of V-308, the 1-mc mixer. Terminal "D" of T-310 provides a convenient test point for the alignment of the

selective double-tuned 21.4-mc amplifier, consisting of T-309 and T-310. This selective 21.4-mc amplifier is used to increase the rejection of the second image and to further isolate the 22.4-mc crystal oscillator from the front end.

The output of the 1-mc mixer, V-308 is coupled to V-309, a 1-mc amplifier, through T-311 and T-312, a 1-mc double-tuned transformer. V-310, the signal detector and AGC diode, is coupled to V-309 through T-313 and T-314, the second 1-mc double-tuned IF transformer.

With the AGC switch in the manual position, the AGC voltage is shorted to ground, and R-105 is unshorted and becomes operational. (R-105 is the IF gain control in the cathode circuit of V-307 and V-309, the two 6BA6 remote cutoff IF amplifiers).

d. BEAT FREQUENCY OSCILLATORS, 21.4 MC AND 1 MC.--The two BFO's use 6CB6 type tubes in an electron-coupled Hartley circuit. The BFO's are an integral part of the IF amplifiers, with V-312 in the 21.4-mc circuit and V-311 in the 1-mc circuit. A differential capacitor is used, permitting a single front panel Pitch control to operate both the 21.4-mc and the 1-mc BFO's.

The BFO "ON-OFF" switch is interwired with the "AM 300KC-FM-AM 10KC" function switch so that the appropriate BFO is energized.

e. VIDEO.--The output of the IF strips, AM 300KC, FM 300KC, or AM 10KC, is fed to the input of a 5-position lowpass filter. The cutoff frequency can be set to 300 kc, 30 kc, 10 kc, 3 kc, or 1 kc by a front-panel selector switch. The output of this filter drives one half of a 12AU7 direct-coupled video amplifier (V-106A). A zero-center scale meter (M-102) is used as a tuning indicator and is connected in a bridge circuit consisting of the video amplifier and the other half of the 12AU7 (V-106B). A partial bypass of the cathode of the first video amplifier extends the high frequency response. The output video amplifier is a 12AU7 tube (V-108) connected as a direct-coupled cathode follower. A tap on the cathode resistor of the output video amplifier provides the signal source to drive the monitor audio amplifier, V-107.

f. THE SQUELCH CIRCUIT.--The squelch circuit is best described with the aid of the simplified schematic of Fig. 2-2. V-105A acts as a gated audio amplifier stage, while V-105B serves as a d-c amplifier and gate generator. The circuit is connected in such a manner that V-105B has zero grid voltage when no signal is being received and has a negative signal applied when a carrier is being received. The audio amplifier stage, V-105A, will pass an audio signal when the d-c amplifier, V-105B, is nonconducting, and will not pass an audio signal when V-105B is in a conducting condition. In this manner the audio circuit is disabled when no carrier is being received. The carrier strength necessary to make the audio section operative is adjusted by the threshold (squelch) control R-115. The operation

of this circuit is detailed in the following paragraph.

The d-c amplifier tube, V-105B, is connected between the 150V supply and ground. The fixed bias on this stage is adjusted by R-115. The audio section, V-105A, is connected between the 250-volt supply and the 150-volt supply. The bias on this stage is the voltage drop across the cathode resistor, R-114, plus the voltage drop, if any, in the plate load resistor, R-117, in V-105B. Assuming no signal is being received, the grid of the d-c amplifier tube is zero, or at most has a very small negative voltage on it. R-115 is adjusted until the noise just disappears from the output. In this condition the d-c amplifier tube is drawing plate current, and the drop across its plate load, R-117, appears as a bias to V-105A. This voltage drop is sufficient to cut off V-105A and disable the audio signal. When a carrier is tuned in, a negative voltage is supplied from the second limiter in the IF strip through an isolation resistor, R-111, to the grid of V-105B. This voltage is sufficient to cut off V-105B, causing the voltage to drop to zero across the V-105B plate load resistor, R-117. V-105A receives only its normal cathode bias generated in its cathode bias resistor, R-114, and audio signals are passed through to the output.

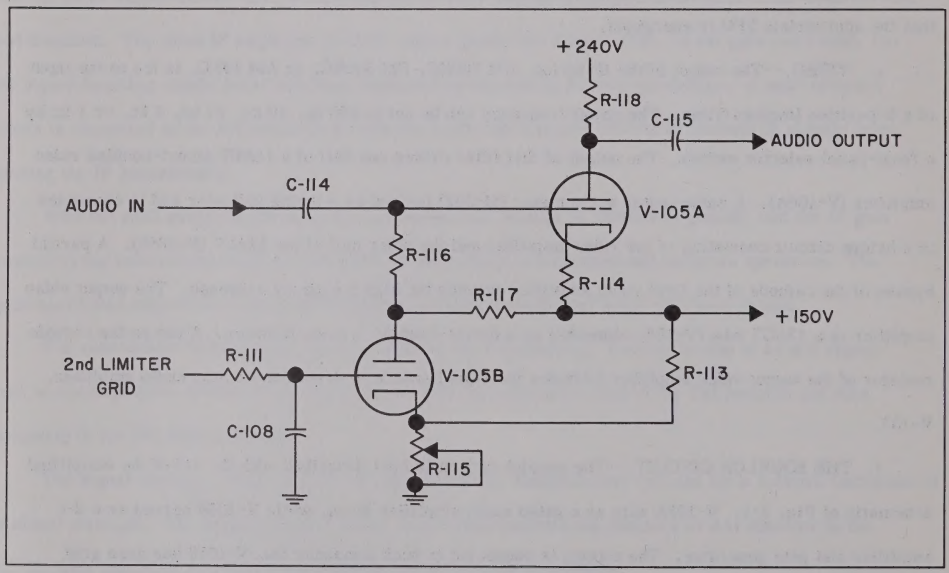


Fig. 2-2. Model 1301-1302 Receiver Squelch Circuit, Simplified Schematic

When receiving amplitude-modulated signals with a high percentage of modulation, the squelch circuit may be cut off on negative modulation peaks when the envelope amplitude becomes zero. To prevent this, a filter consisting of R-111 and C-108 is placed between the limiter and the grid of the d-c amplifier.

This filter has a long enough time constant to reject the lowest audio frequency likely to be received, but not long enough to noticeably delay operation of the squelch.

g. AUDIO AMPLIFIER.--The output of V-105A is used to drive a two-stage resistance coupled audio amplifier. The output amplifier drives a four-inch panel-mounted speaker, a phone jack which silences the speaker when in use, and an independent 600-ohm balanced output.

h. PANORAMIC OUTPUT.--An output at the IF 21.4-mc frequency is provided for connection to a panoramic adapter. This output is obtained from the 6AK5 (V-203) mixer plate load through a capacity divider. A special panoramic adapter, type no. T-3000 CI, may be secured from Panoramic Radio Products, Inc., 10 South Second Avenue, Mount Vernon, New York.

i. POWER SUPPLY.--A conventional two-section capacitive input filter power supply delivers a d-c potential of 240 volts. V-102 and V-103 provide two separate 150-volt d-c regulated outputs.

A 6.3-volt winding supplies the filaments of all tubes except V-101 and V-201. V-201 is supplied by a separate 10.8-volt winding in series with an external 4-ohm dropping resistor and V-101 by a separate 5-volt winding of the power transformer T-101.

The models 1301-1302 receivers have a toggle switch located on the rear apron, which provides for the selection of either 115-volt or 230-volt operation.

SECTION 3

OPERATION

1. INTRODUCTION.

Figure 1-1 shows the appearance and location of controls on the front panel of the Models 1301 and 1302 Special Purpose Receivers.

2. CONTROL SETTINGS

a. Set line voltage selector switch S-102, located on the rear apron of the chassis, to the appropriate position for the line voltage encountered. This switch provides for input voltages of either 115 or 230 VAC, and is equipped with a locking device which prevents accidental switching from one voltage to the other.

b. POWER.--Turn on the power switch, S-101, located on the front panel.

Note: For the Model 1302 receiver, a time delay relay (K-101) is used to delay the application of plate voltage to the 1st and 2nd RF amplifiers for approximately 120 seconds. Delay of plate voltage to the 416B tube (V-201) is in the interest of improved tube life. The receiver will therefore be inoperative

for approximately two minutes after it is turned on.

c. MODULATION.--The modulation selector switch (S-104) has three positions, AM 300KC, FM, and AM 10KC.

(1) FM.--The function switch must be in the FM position. The IF bandwidth is 300 kc. The BFO should be in the "OFF" position. The Manual-AGC switch (S-105) and the IF gain control are inoperative in the FM position. The zero-center tuning meter (M-102) is operative only in the FM position.

(2) AM WIDE BAND (300 KC).--The function switch must be in the AM 300KC position. The Manual-AGC switch should be in the AGC position except when the BFO is to be used. For BFO operation, the manual IF gain control (R-105) should be adjusted to produce the loudest beat note.

(3) AM NARROW BAND (10KC).--The function switch must be in the AM 10KC position. The Manual-AGC switch should be in the AGC position except when the BFO is to be used. For BFO operation, the manual IF gain control (R-105) should be adjusted to produce the loudest beat note. Care must be taken when tuning in the 10KC IF position to avoid "missing" the station.

d. VIDEO BANDWIDTH.--The video bandwidth switch (S-106) has five positions: 300KC, 30KC, 10KC, 3KC, and 1KC. The position resulting in the best S/N ratio should be used.

e. SQUELCH.--The squelch circuit is inoperative with the squelch control R-115 counterclockwise against its stop. In the absence of a signal, rotate the squelch threshold control clockwise until the background noise just becomes inaudible. Any usable signal should then disable the squelch circuit.

f. AUDIO.--Adjust as needed.

SECTION 4

MAINTENANCE

1. INTRODUCTION.

The Models 1301 and 1302 receivers should give comparatively trouble-free performance. If, however, trouble occurs, rapid and accurate trouble-shooting can be accomplished by the application of a simple effect-to-cause reasoning process, along with the data given in this section. A thorough knowledge of the theory of operation, as contained in section 2, is essential to successful effect-to-cause reasoning. As a general statement, it may be said that frequent recurrence of a trouble usually indicates that the effect, not the cause, has been remedied, and further investigation should be made.

In time, the blower for the 416B tube (V-201, used only on the Model 1302 receiver) may become clogged with dust collected from the atmosphere. Since this impairment of the blower's efficiency may

cause the loss of a very expensive tube, it is recommended that the blower be disassembled and cleaned whenever it is found to be sufficiently dirty to warrant such action.

The voltage chart and the overall schematic diagram contained herein will be useful in locating trouble. Such trouble as broken leads or solder joints and loose or defective tubes will not be discussed in detail, but should be suspected and searched for in all cases where the trouble is not immediately apparent. Illustrations given in this section show the location of all major components and such smaller components as cannot be readily identified from adjacent stencils on the receiver.

All illustrations of an overall nature (front, top, bottom, and rear views of the receiver) are of the Model 1302. With certain reservations, however, these illustrations will serve to represent the Model 1301 receiver, since the two receivers have identical chassis and IF subassemblies. Where differences occur, as in the RF tuners, separate illustrations of the subassemblies or components for each receiver are included. Reference to the parts list (Section 5) will further clarify the identification of components for each receiver.

2. ALIGNMENT PROCEDURE. Function Switch in FM 300KC position.

Alignment and adjustment of the models 1301 and 1302 receivers is accomplished according to the following outline, and should be carried out in the sequence given.

a. SECOND LIMITER ALIGNMENT

(1) C. W. METHOD

Step 1. Remove V-302.

Step 2. Set the signal generator to 21.4 mc and connect to pin 1 of V-303.

Step 3. Connect a high-resistance voltmeter (VTVM) to the second limiter grid return (TP-302).

Step 4. Set the signal generator output to produce approximately 2 volts on the VTVM.

Step 5. Detune the primary slug of T-307 counterclockwise against the stop.

Step 6. Increase the signal generator output to produce approximately the same value on the VTVM as in step 4 above.

Step 7. Adjust the secondary slug of T-307 for a maximum reading on the VTVM.

Step 8. Adjust the primary slug of T-307 for maximum reading, keeping the signal generator output adjusted for the same value on the VTVM as in step 4 above. DO NOT readjust the secondary for a maximum as this will result in improper adjustment.

The second limiter transformer, T-307, has a 3-db bandwidth of approximately 2.5 mc. The low circuit Q's and heavy coupling make visual alignment of this transformer desirable but not essential. The

procedure outlined above will produce less than 1 db tilt in this transformer. Thus the slope is negligible over the narrow 300-kc IF bandwidth.

(2) SWEEP METHOD

Step 1. Remove V-302.

Step 2. Connect sweep generator to pin 1 of V-303.

Step 3. Connect oscilloscope to second limiter grid (TP-302).

Step 4. Adjust the primary and secondary of T-307 for maximum symmetrical output around a 21.4-mc center frequency.

b. DISCRIMINATOR ALIGNMENT.--In preparation for alignment of the discriminator transformer, T-308, remove the 6AK5 (second limiter) tube, V-304, and note the reading of the center frequency meter M-102. If it is off center, it should be centered by means of the potentiometer, R-127, located on the rear apron of the chassis. Difficulty in readily securing an exact center reading is indicative of a defective 6AL5 tube (V-305), a defective 12AU7 tube (V-106), or their associated components, and must be corrected before proceeding further. After this adjustment, replace V-308 and proceed as follows:

(1) C. W. METHOD

Step 1. Remove V-302.

Step 2. Set the signal generator to 21.4 mc and connect to pin 1 of V-303.

Step 3. Connect a high-resistance d-c voltmeter (VTVM) to the second limiter grid return (TP-302).

Step 4. Set the signal generator output to produce 2 volts on the VTVM.

Step 5. Connect the VTVM to the discriminator output lead (TP-303).

Step 6. Tune the secondary of T-308 to zero output, then counterclockwise until the VTVM shows a reading of 0.5 volt.

Step 7. Tune the primary of T-308 to give a maximum reading on the VTVM.

Step 8. Retune the secondary to produce a zero (balance) reading on the VTVM.

Step 9. Detune the signal generator above and below 21.4 mc to produce a maximum positive and negative output. These voltages should be equal and have a magnitude of approximately ± 8 volts D.C Minor adjustment of the primary of T-308 will cause the two peak voltages to become exactly equal.

(2) SWEEP METHOD

Step 1. Remove V-302.

Step 2. Connect the sweep generator to pin 1 of V-303.

Step 3. Connect the oscilloscope to the discriminator output lead (TP-303).

Step 4. Adjust the primary and secondary slugs of T-308 for maximum symmetrical output around a 21.4-mc center frequency. The peak-to-peak separation should be 750 kc.

c. IF ALIGNMENT

(1) C. W. METHOD.--The characteristics of cascaded, critically coupled amplifier stages are such as to make alignment difficult; however, the advantages of response stability, gain, and adjacent-channel selectivity make this type of coupling most desirable. Alignment has been kept as simple as possible by designing the three capacitively coupled double-tuned IF transformers, comprising T-301, T-302, T-303, T-304, T-305, and T-306, to have almost identical characteristics. The primary and secondary Q's have been kept high, and therefore the mutual coupling is low for the required bandwidth. These factors suggest a rather simple alignment procedure with a minimum of equipment. The resonant frequency of the primary or the secondary in the absence of the other (no coupling) is very nearly the proper tuning when the circuits are coupled. If the primary circuit is detuned, the secondary adjusted for maximum output, and the primary then retuned to maximum, the overall response will be approximately correct. This procedure is as follows:

Step 1. Remove the oscillator tube (V-204) to prevent mixing at the signal generator harmonic frequencies.

Step 2. Set the receiver dial to approximately 60 mc.

Step 3. Set the generator to 21.4 mc and connect to pin 1 of V-203.

Step 4. Connect a high-resistance d-c voltmeter (VTVM) to the second limiter grid return (TP-302).

Step 5. Set the generator output level to produce approximately 2 v on the VTVM.

Step 6. If the IF amplifier is known to be considerably out of adjustment, it will be necessary to peak T-301, T-302, T-303, T-304, T-305, and T-306 to provide adequate gain.

Step 7. Detune the primary (T-305) counterclockwise against the stop.

Step 8. Increase the signal generator output to produce 2 v on the VTVM.

Step 9. Adjust the secondary (T-306) for maximum reading on the VTVM.

Step 10. Adjust the primary (T-305) for maximum reading, keeping the signal generator output adjusted to maintain 2 v on the VTVM. DO NOT readjust the secondary (T-306) for a maximum as this will result in improper adjustment.

Step 11. Repeat steps 7 through 10 for T-302, T-303, and T-304. NOTE: It is not necessary to follow this sequence, as any transformer may be adjusted without affecting the others.

The alignment may be checked by varying the signal generator frequency ± 100 kc. The output voltage should be constant within ± 1 db over this range.

(2) SWEEP METHOD.--If a sweep generator and an oscilloscope are available, they may be used to check the response; however, the above procedure should first be performed and then the response checked or retouched, as required. For this test, replace the signal generator with the sweep generator and the VTVM with the oscilloscope. Slight readjustment of the transformer slugs may give some improvement in response shape.

3. BFO ADJUSTMENT. Function switch in AM 300KC position, AGC-Man. switch in "Man." position.

Step 1. Adjust IF gain as needed.

Step 2. Connect 21.4-mc CW marker to TP-201 (1301) or TP-202 (1302).

Step 3. Turn BFO on and, with pitch control on reference line, adjust T-316 for zero beat.

4. ALIGNMENT PROCEDURE. Function switch in AM 10KC position, BFO off, AGC off, IF gain control maximum clockwise.

a. C. W. METHOD

Step 1. Connect an accurate 21.4-mc CW generator to pin 1 of V-307.

Step 2. Remove local oscillator, V-204.

Step 3. Connect VTVM to terminal "D" of T-310.

Step 4. Adjust T-309 and T-310 for maximum indication on meter.

Step 5. Connect VTVM to TP-304.

Step 6. Peak T-311, T-312, T-313, and T-314 for maximum indication on meter.

Step 7. Turn BFO on and with pitch control on reference line, adjust T-315 for zero beat.

b. SWEEP METHOD

Step 1. Connect sweep generator to pin 1 of V-307.

Step 2. Connect oscilloscope to terminal "D" of T-310.

Step 3. Adjust T-309 and T-310 for symmetrical round-nosed response centered at 21.4 mc. (Use accurate 21.4-mc marker.)

Step 4. Reduce sweep width to approximately 20 kc and connect oscilloscope to TP-304.

Step 5. Adjust T-311, T-312, T-313, and T-314 for round-nosed response with maximum gain with 21.4-mc marker in center of response.

Step 6. Turn BFO on and with pitch control on reference line, adjust T-315 for zero beat.

5. MECHANICAL ADJUSTMENTS.

a. The procedure for adjusting the dial on the Models 1301 and 1302 receivers is simple and can be done rapidly.

Step 1. Loosen both stops.

Step 2. Rotate dial to the extreme low-frequency end until the dial is stopped by the inductuner stop.

Step 3. Back up just off the inductuner stop and tighten the set screws in the dial-drive low-frequency stop.

Step 4. The dial mark just below 55 mc should line up under the indicator. (This mark is the logging-scale zero.) If this mark does not coincide with the indicator line, loosen the dial set screws, align, and re-tighten the screws.

Step 5. Rotate dial to the extreme high-frequency end until the dial is stopped by the inductuner stop.

Step 6. Back up just off the inductuner stop and tighten the set screws in the dial-drive high-frequency stop. This completes the dial adjustments.

b. LOCAL OSCILLATOR ADJUSTMENT, MODEL 1302 ONLY.--The only adjustment necessary in the local oscillator is to make the tuning dial read properly. This section may be disregarded if the dial is reading correctly. If a tube has been replaced and an error is noted, it may be corrected by adjustment of C-229. This adjustment should be made with a signal generator of high accuracy at 60 mc.

The high-frequency end of the dial is controlled by the location of C-230 on the end inductor L-210. The correct adjustment is made at the factory and should not require readjustment in the field.

c. LOCAL OSCILLATOR ADJUSTMENT, MODEL 1301 ONLY.--The only adjustment necessary in the local oscillator is to make the tuning dial read properly. This section may be disregarded if the dial is reading correctly. If a tube has been replaced and an error is noted, it may be corrected by adjustment of C-233. This adjustment should be made with a signal generator of high accuracy at 55 mc.

The high-frequency end of the dial is controlled by the location of C-231 on the end inductor. The correct adjustment is made at the factory and should not require readjustment in the field.

6. RF AMPLIFIER ALIGNMENT.

a. RF AMPLIFIER ALIGNMENT, MODEL 1302 ONLY.--The RF circuits are wide band compared with the IF selectivity and are designed around the highly stable Mallory S-4 spiral inductuner. The end inductors are also very stable, and therefore the unit should not require realignment. If realignment is

found necessary, proceed as follows:

Step 1. Unsolder C-248 from the inductuner lug and solder to the BNC test connector.

Step 2. Connect a sweep generator with a 50-ohm source impedance to the BNC test jack.

Step 3. Connect oscilloscope to front-end test point TP-202.

Step 4. Set the dial to 70 mc.

Step 5. Adjust C-217 and C-222 for a double-tuned symmetrical response centered at 70 mc. Use 70-mc marker.

Step 6. Adjust C-220 for a 15% dip in the response.

Step 7. Repeat step 5 above.

Step 8. Set dial to 250 mc and bend end inductors L-207 and L-209 to produce a symmetrical response centered at 250 mc. Use 250-mc marker.

Step 9. Unsolder C-248 from the BNC test connector and resolder to the inductuner.

Step 10. Connect sweep generator to the antenna jack J-101 or J-201. NOTE: An accurate 50-ohm source can be achieved by using a 6- or 10-db 50-ohm pad between the sweep generator output and the receiver input.

Step 11. Set the dial to 70 mc.

Step 12. Adjust C-243 for a symmetrical response.

Step 13. Set the dial to 250 mc and move the position of C-244 along the end portion of end inductor L-204 to produce a symmetrical round-nose response.

b. RF AMPLIFIER ALIGNMENT, MODEL 1301 ONLY.--The RF circuits are wide band compared with the IF selectivity and are designed around the highly stable Mallory S-4 spiral inductuner. The end inductors are also very stable, and therefore the unit should not require realignment. If realignment is found necessary, proceed in accordance with the following outline:

Step 1. Connect a sweep generator with a 75-ohm source impedance to J-101 or J-102.

Step 2. Connect oscilloscope to front-end test point TP-201.

Step 3. Set the tuning dial to 55 mc.

Step 4. Adjust C-222 and C-226 for a double-tuned symmetrical response centered at 60 mc. Use 60-mc marker.

Step 5. Adjust C-224 for a 3% dip.

Step 6. Repeat step 4.

Note: The RF response at the high-frequency end is controlled by rigid fixed end inductors and should not be adjusted in the field.

TUBE	TYPE	PIN #1	PIN #2	PIN #3	PIN #4	PIN #5	PIN #6	PIN #7	PIN #8	PIN #9
MODEL 1302, FRONT END										
V-201	416B	Cathode	+6.95V	Filaments	6.0VAC	Plate +	195V	Grid Ring	+6.9V	
V-202	6J4	Gnd	1.1	Gnd	6.3AC	Gnd	Gnd	130		
V-203	6AK5	-2.0	Gnd	6.3AC	Gnd	145	59	Gnd		
V-204	6AF4A	*53	Do not measure	Gnd	6.3AC	2.5	do not measure	*53		
MODEL 1301, FRONT END										
V-202	6J4	Gnd	1.2	Gnd	6.3AC	Gnd	Gnd	158		
V-203	6AK5	-1.4	Gnd	Gnd	6.3AC	146	55	Gnd		
V-204	6AF4A	*53	Do not measure	Gnd	6.3AC	2.5	Do not measure	*53		
MODELS 1301 & 1302, MAIN CHASSIS										
V-101	5R4WGY	NC	5VAC 255DC	NC	255AC	NC	255AC	NC	5VAC 255DC	
V-102	OA2	147	NC	NC	NC	147	NC	Gnd		
V-103	OA2	148	NC	NC	NC	148	NC	Gnd		
V-104	6AL5	NC	-.34	6.3AC	Gnd	Gnd	NC	NC		
V-105	12AU7	145	-.27	24	Gnd	Gnd	210	133	150	6.2AC
V-106	12AU7	135	Gnd	6.7	Gnd	Gnd	137	-.1	6.8	6.2AC
V-107	12AU7	98	0	5.7	Gnd	Gnd	230	0	8	6.2AC
V-108	12AU7	235	138	141	Gnd	Gnd	235	138	141	6.2AC
MODELS 1301 & 1302, IF AMPLIFIER; FUNCTION SWITCH IN FM POSITION										
V-301	6DC6	-.33	.7	5.9AC	Gnd	134	76	Gnd		
V-302	6DC6	-.32	.82	5.9AC	Gnd	133	69	Gnd		
V-303	6CB6	-.31	.12	6.0AC	Gnd	135	34	Gnd		
V-304	6AK5	-6.6	Gnd	6.0AC	Gnd	37	83	Gnd		
V-305	6AL5	-.22	-7.0	4.8AC	Gnd	Gnd	Gnd	-12.4		
MODELS 1301 & 1302, IF AMPLIFIER; FUNCTION SWITCH IN AM 300KC POS.										
V-301	6DC6	-1.2	.68	5.9AC	Gnd	130	76	Gnd		
V-302	6DC6	-.37	.81	5.9AC	Gnd	130	71	Gnd		
V-303	6CB6	-.18	.31	6.0AC	Gnd	131	58	Gnd		
V-304	6AK5	-3.8	Gnd	6.0AC	Gnd	35	85	Gnd		
V-305	6AL5	-.13	-7.2	4.8AC	Gnd	Gnd	Gnd	-12.		

Table 4-1. Voltage Measurements, Models 1301 & 1302

TUBE	TYPE	PIN #1	PIN #2	PIN #3	PIN #4	PIN #5	PIN #6	PIN #7	PIN #8	PIN #9
BFO SWITCH ON										
V-312	6CB6	-9.7	0	5.9AC	Gnd	145	126	Gnd		
MODELS 1301 & 1302, IF AMPLIFIER; FUNCTION SWITCH IN AM 10KC POS.										
V-306	6AU6	-7.4	Gnd	Gnd	5.9AC	149	83	0		
V-307	6BA6	-.22	Gnd	5.9AC	Gnd	143	58	.6		
V-308	6AK5	-1.17	Gnd	5.9AC	Gnd	148	71	Gnd		
V-309	6BA6	-.22	Gnd	5.9AC	Gnd	148	61	.65		
V-310	6AL5	0	-.1	5.9AC	Gnd	5.6	Gnd	-1.25		
BFO SWITCH ON										
V-311	6CB6	-27	0	5.9AC	Gnd	149	104	Gnd		

Table 4-1. Voltage Measurements, Models 1301 & 1302 (Continued)

Notes: Line voltage 115VAC, 60 cps; S-102 set to 115V; dial tuned to 220 mc; no signal input; squelch control and audio gain control full CCW; AGC on; BFO off except for measurements on V-311 & V-312; R-127 discriminator tuning meter balance set in accordance with procedure shown in section 4; filament voltages measured between tube pin and chassis except V-201; DC voltages taken with an 11-megohm VTVM; all voltages measured with respect to Gnd.

*Use 1-meg isolating resistor between tube pin and meter probe.

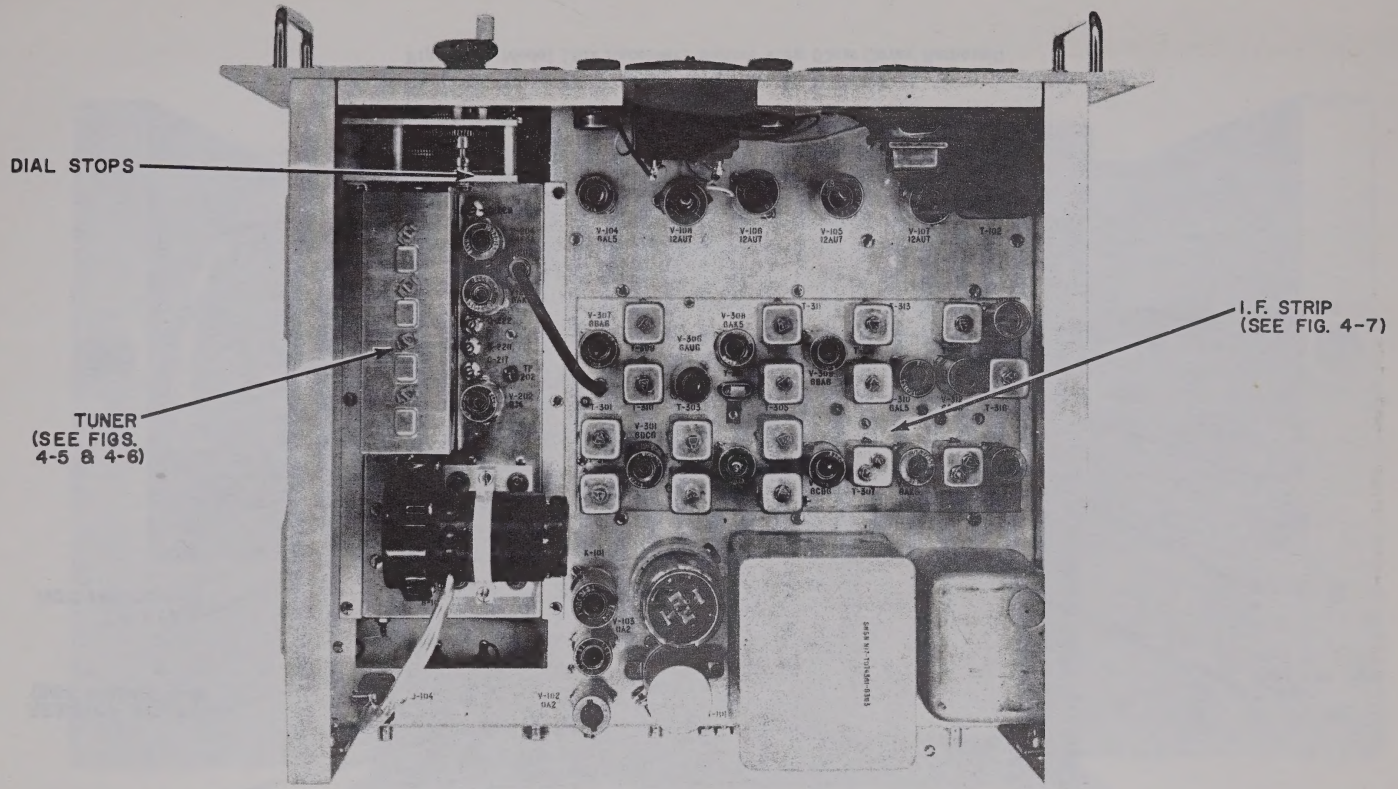


Fig. 4-1. Model 1302 Receiver, Top View (Dust Cover Removed)

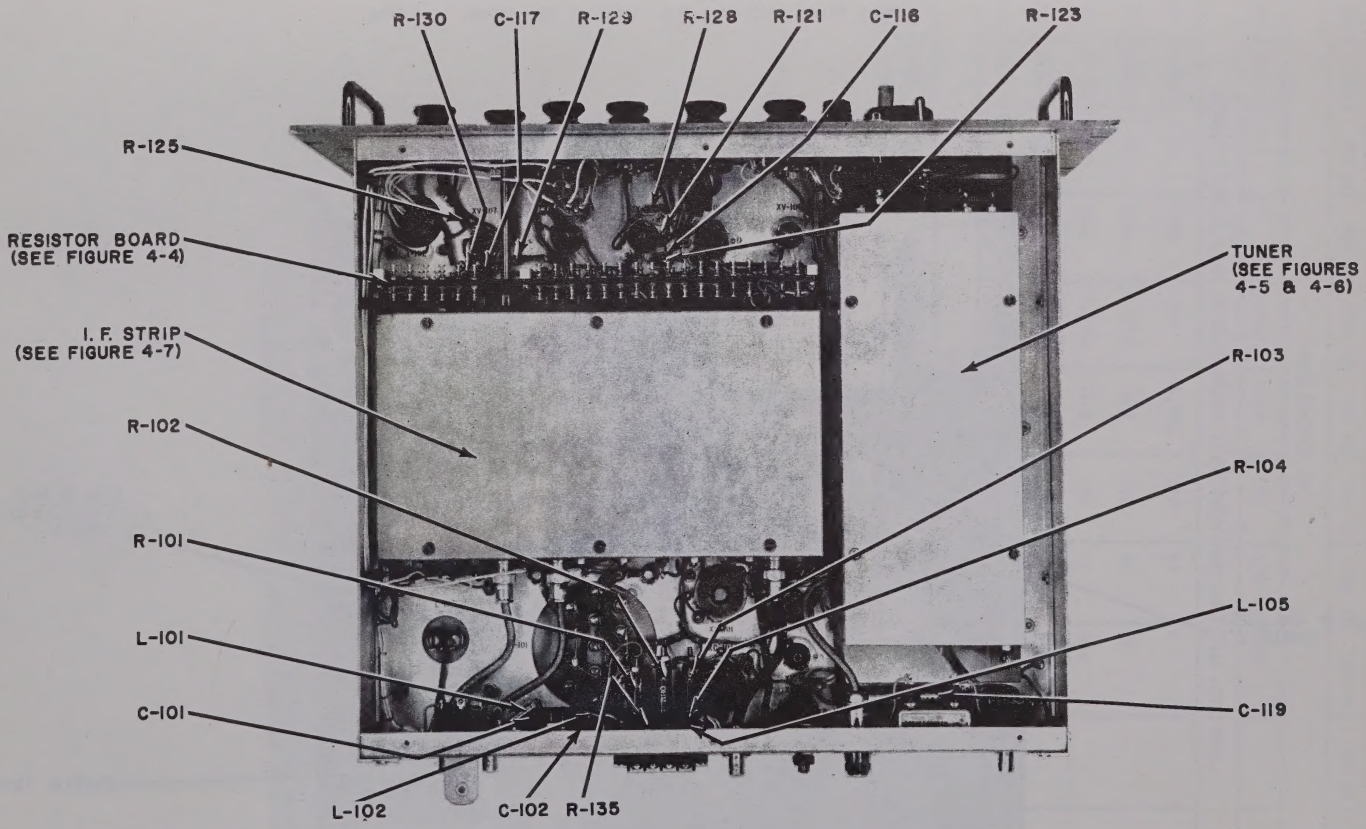


Fig. 4-2. Model 1302 Receiver, Bottom View (Dust Cover Removed)

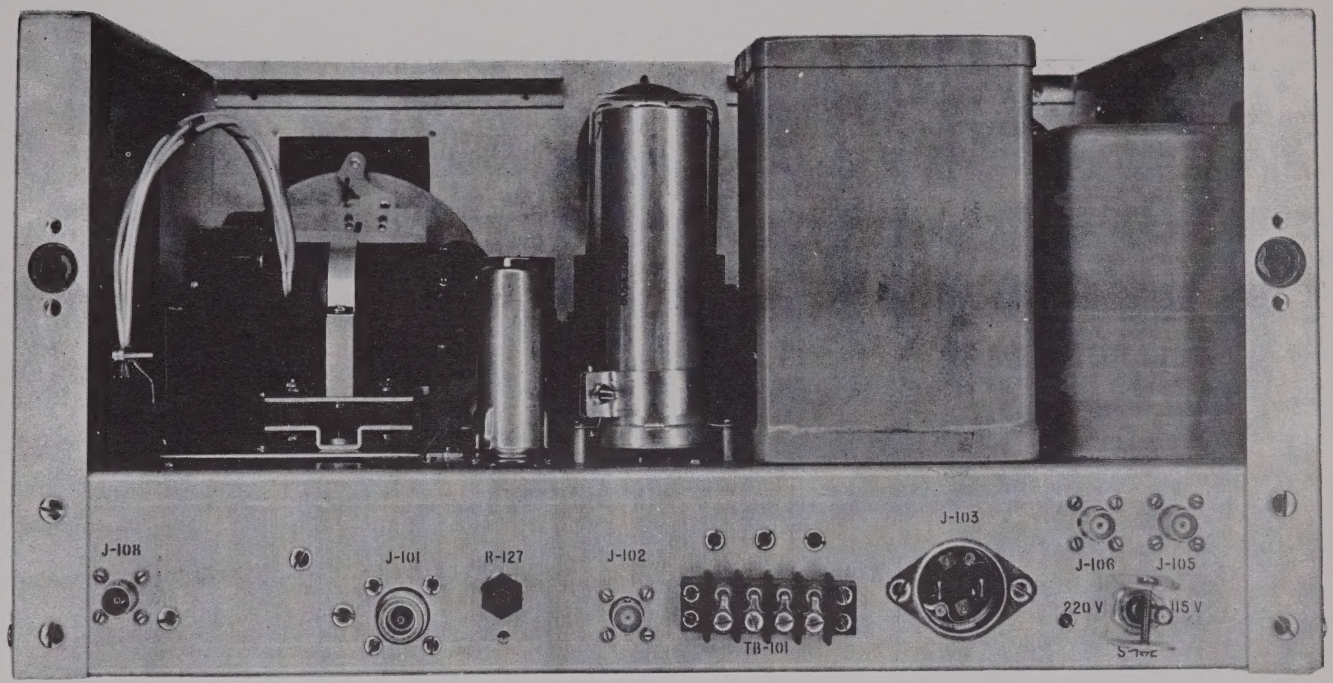


Fig. 4-3. Model 1302 Receiver, Rear View (Dust Cover Removed)

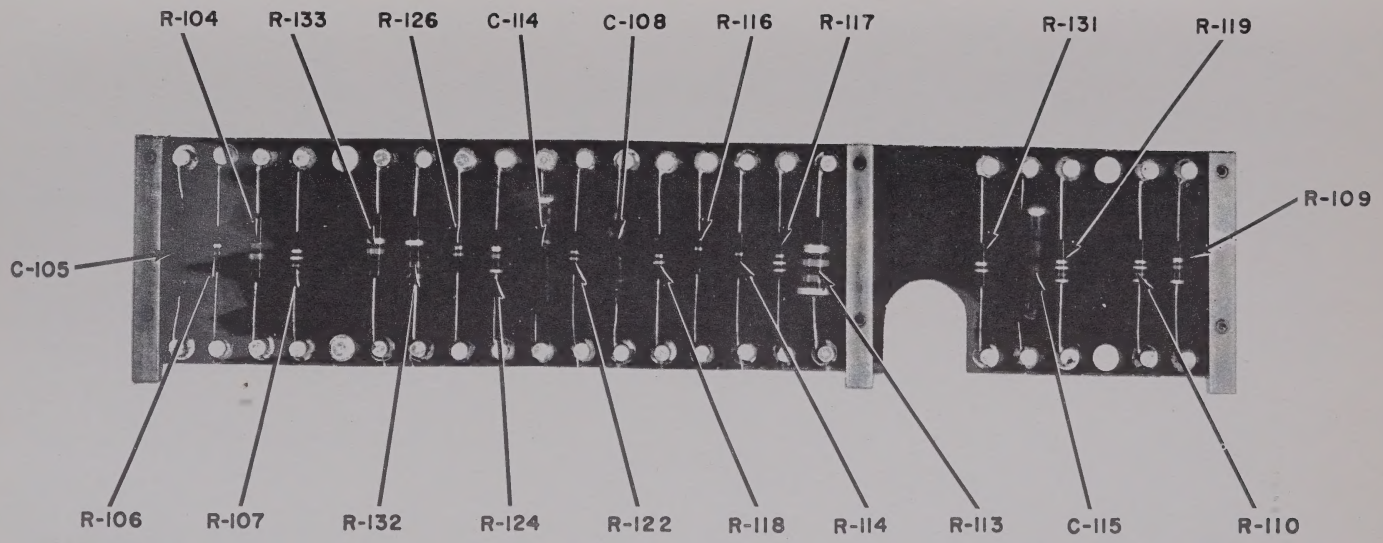


Fig. 4-4. Resistor Board Used in Model 1301-1302 Receiver

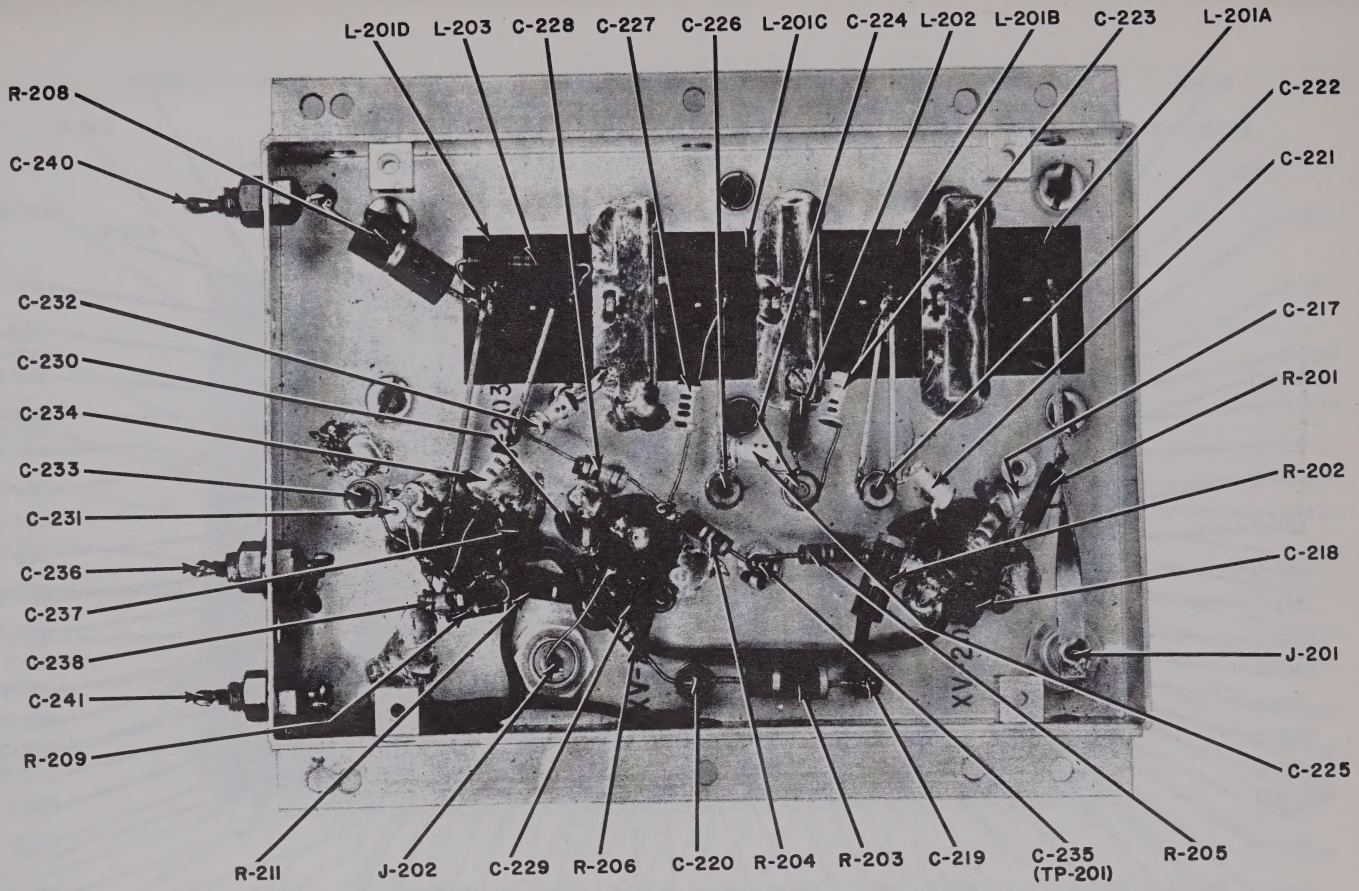


Fig. 4-5. Tuner, Model 1301 Receiver, Bottom View (Dust Cover Removed)

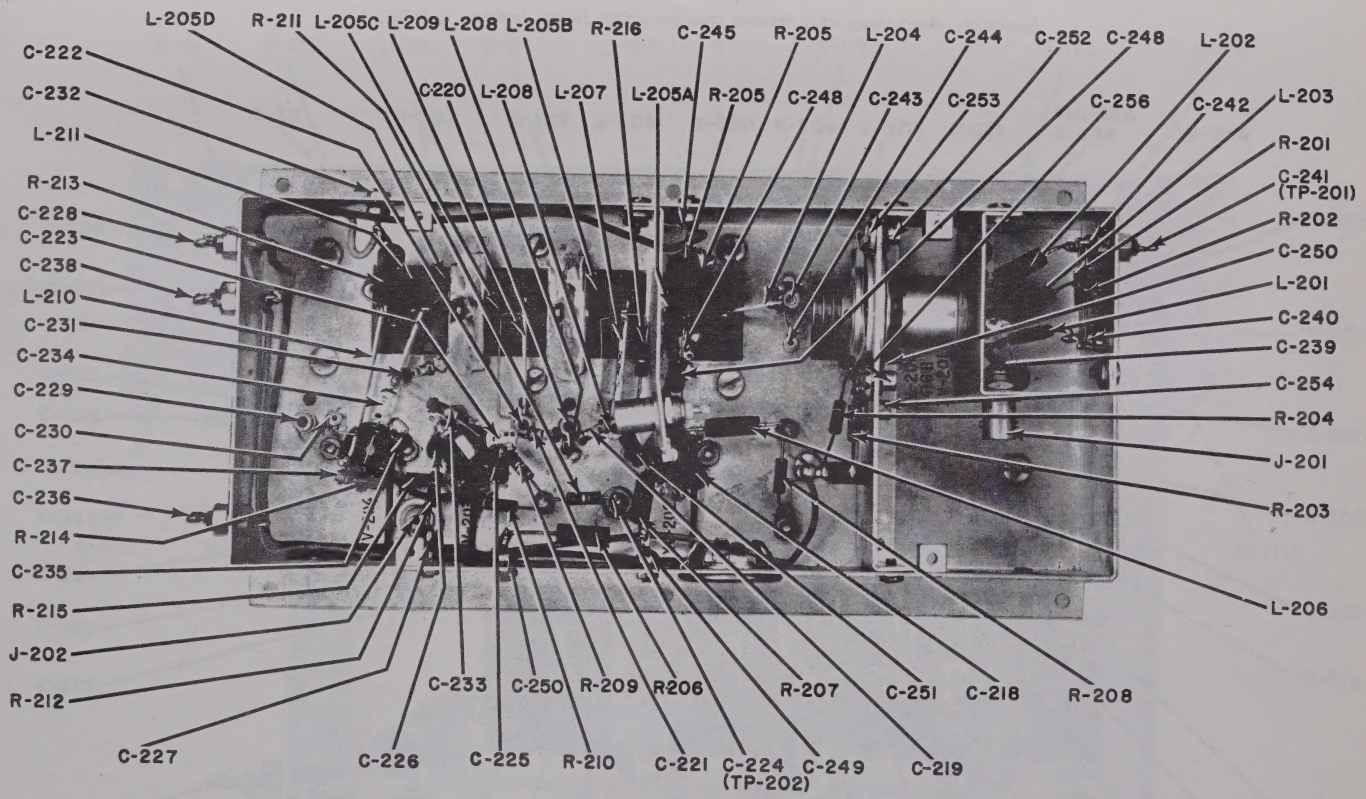


Fig. 4-6. Tuner, Model 1302 Receiver, Bottom View (Dust Cover Removed)

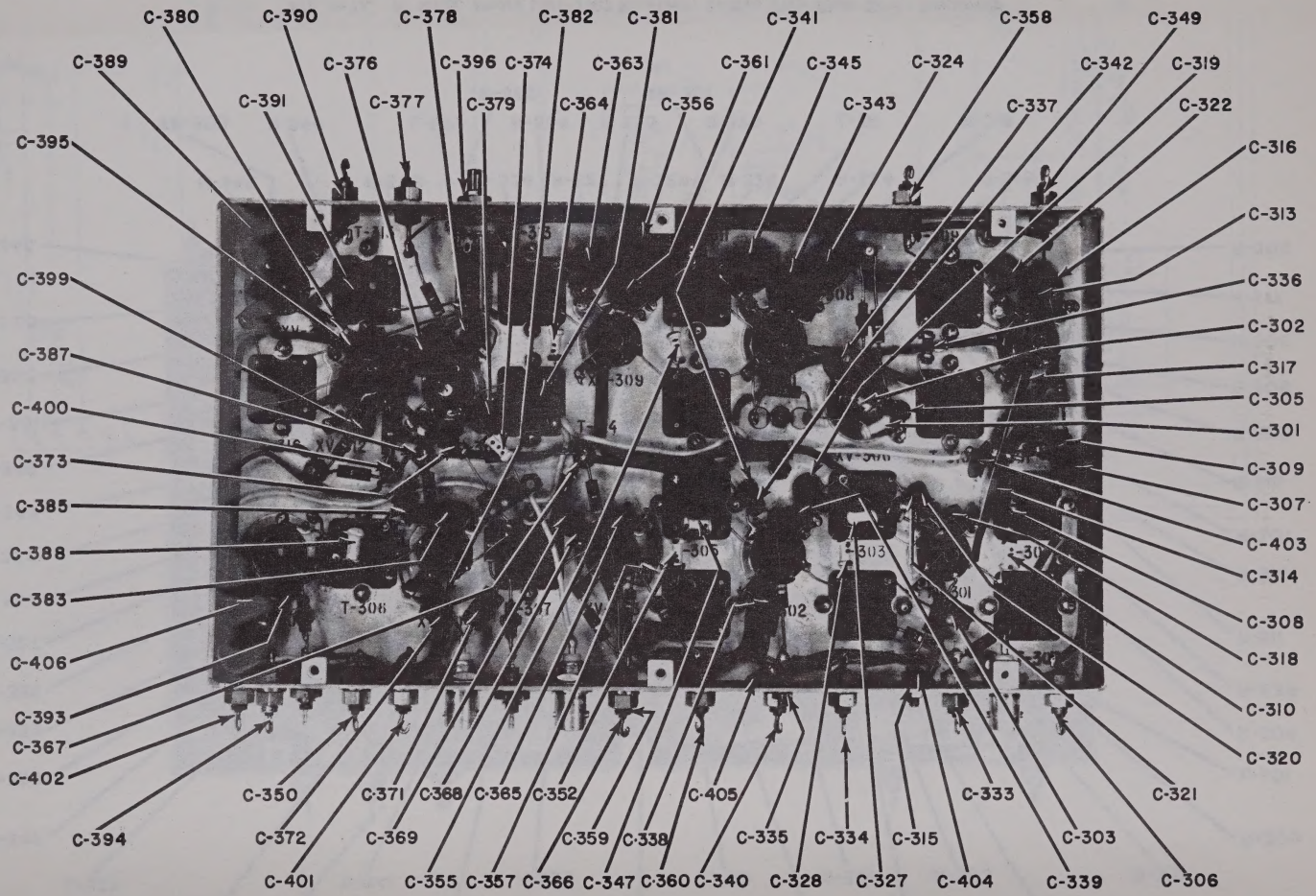


Fig. 4-7. IF Strip, Model 1301-1302 Receiver, Bottom View (Dust Cover Removed)

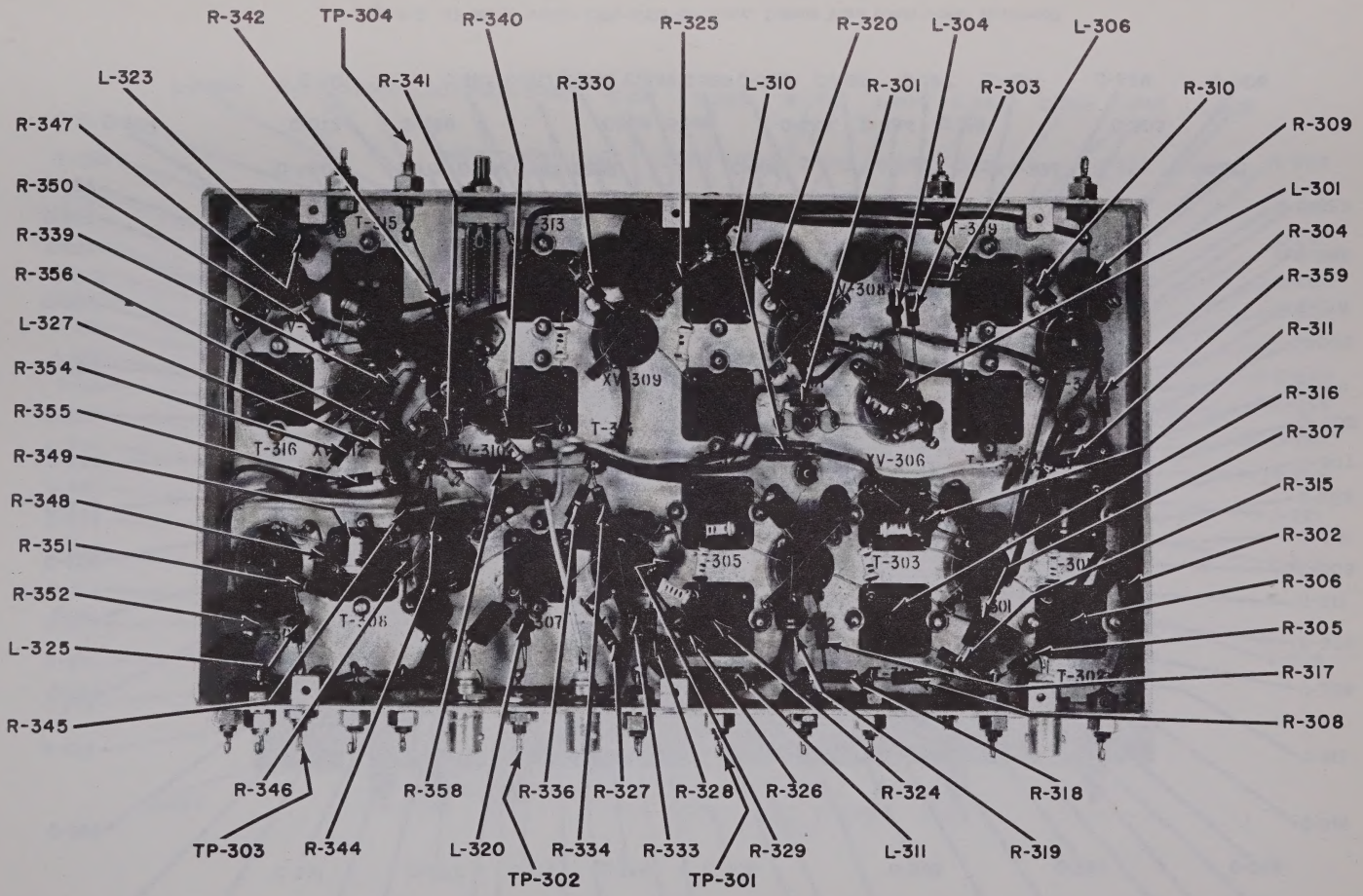
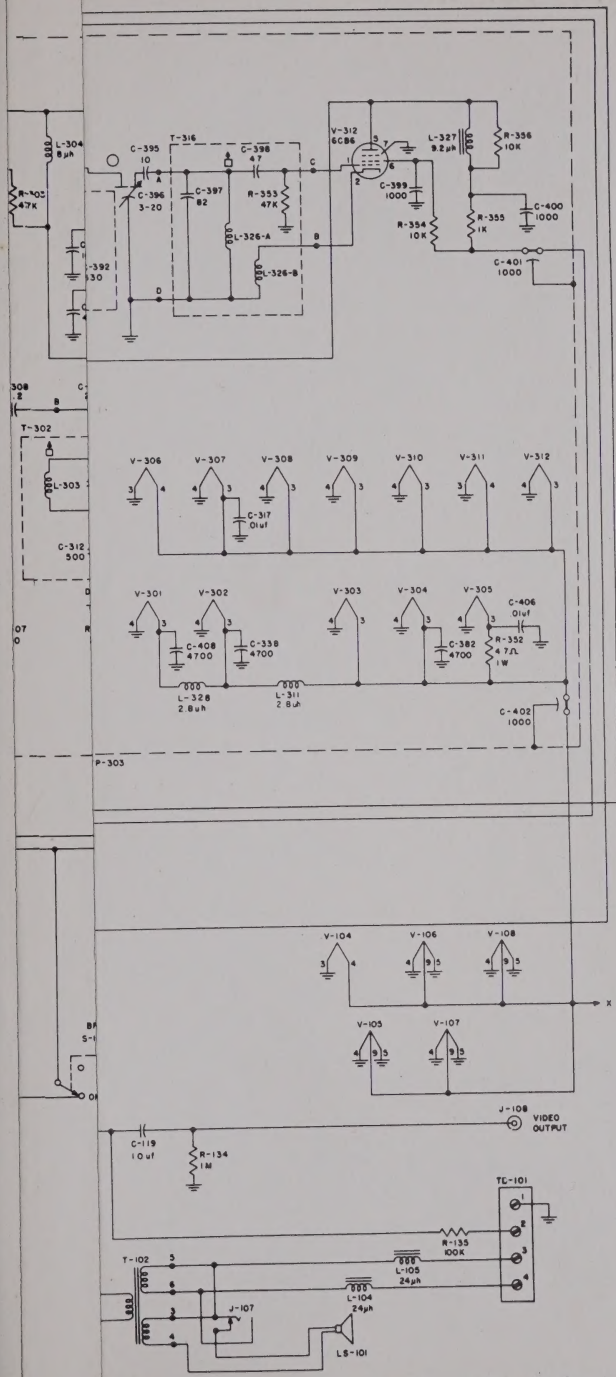


Fig. 4-7A. IF Strip, Model 1301-1302 Receiver, Bottom View (Dust Cover Removed)



NOTES:
1. CAPACITORS ARE FIXED AND ARE IN uuf UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE FIXED, MEASURED IN OHMS, ±10%, 1/2W UNLESS OTHERWISE SPECIFIED.

Fig. 4-8. Model 1301 Receiver, Schematic Diagram

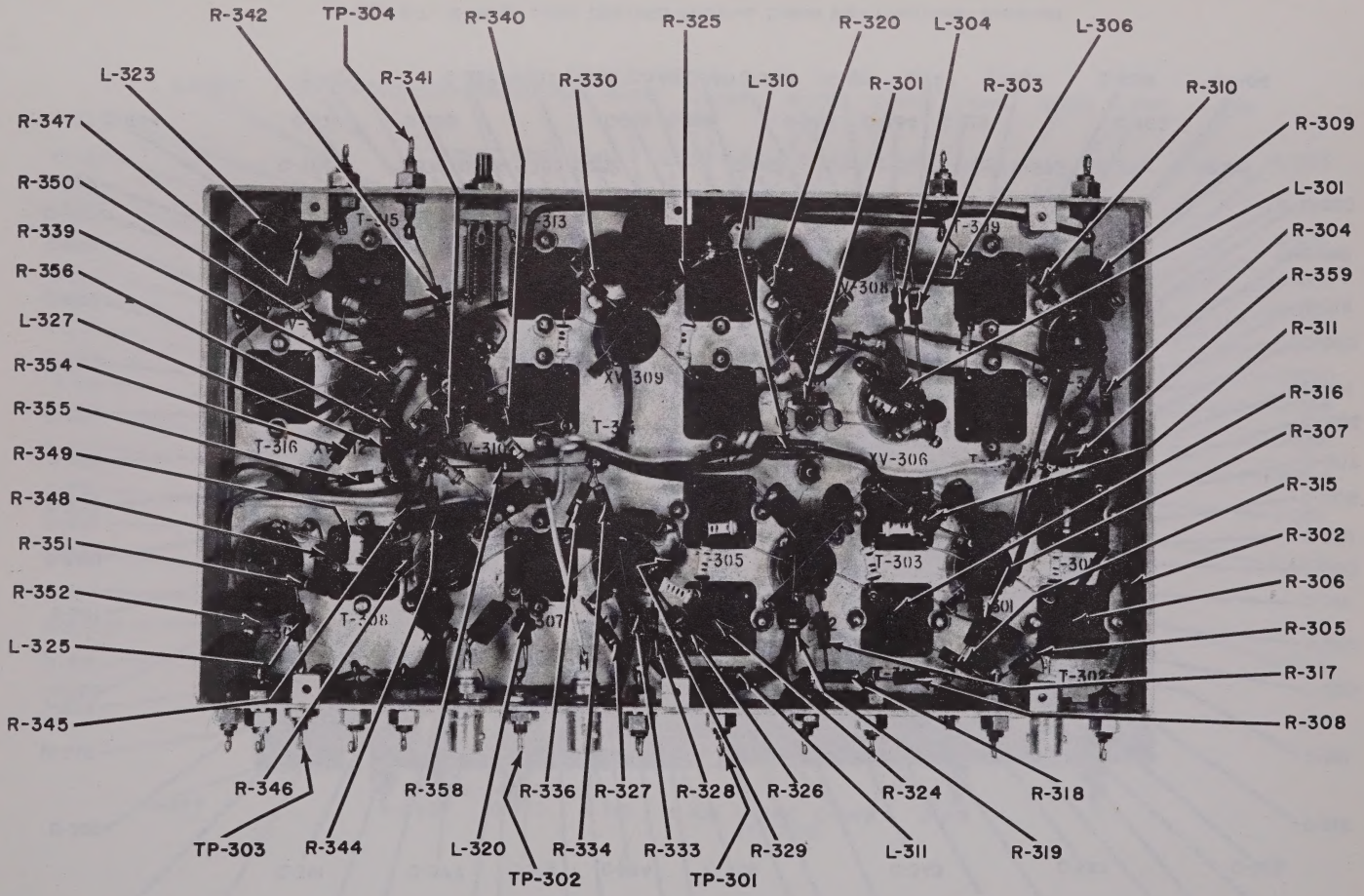


Fig. 4-7A. IF Strip, Model 1301-1302 Receiver, Bottom View (Dust Cover Removed)

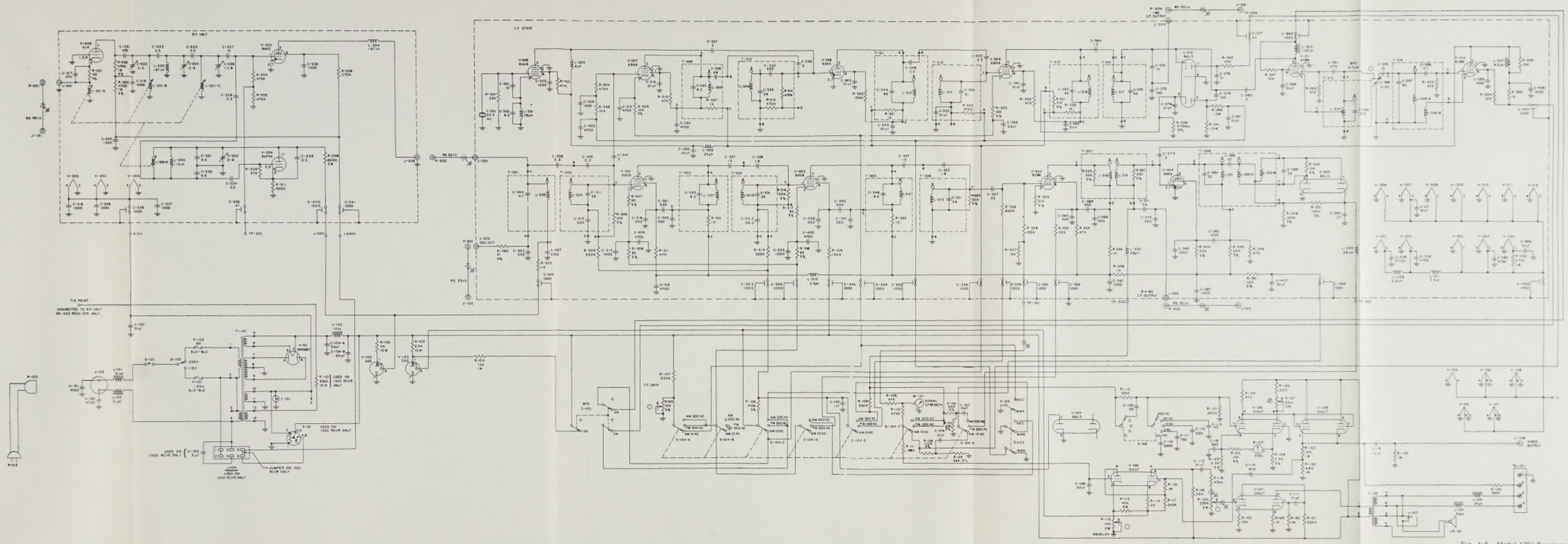
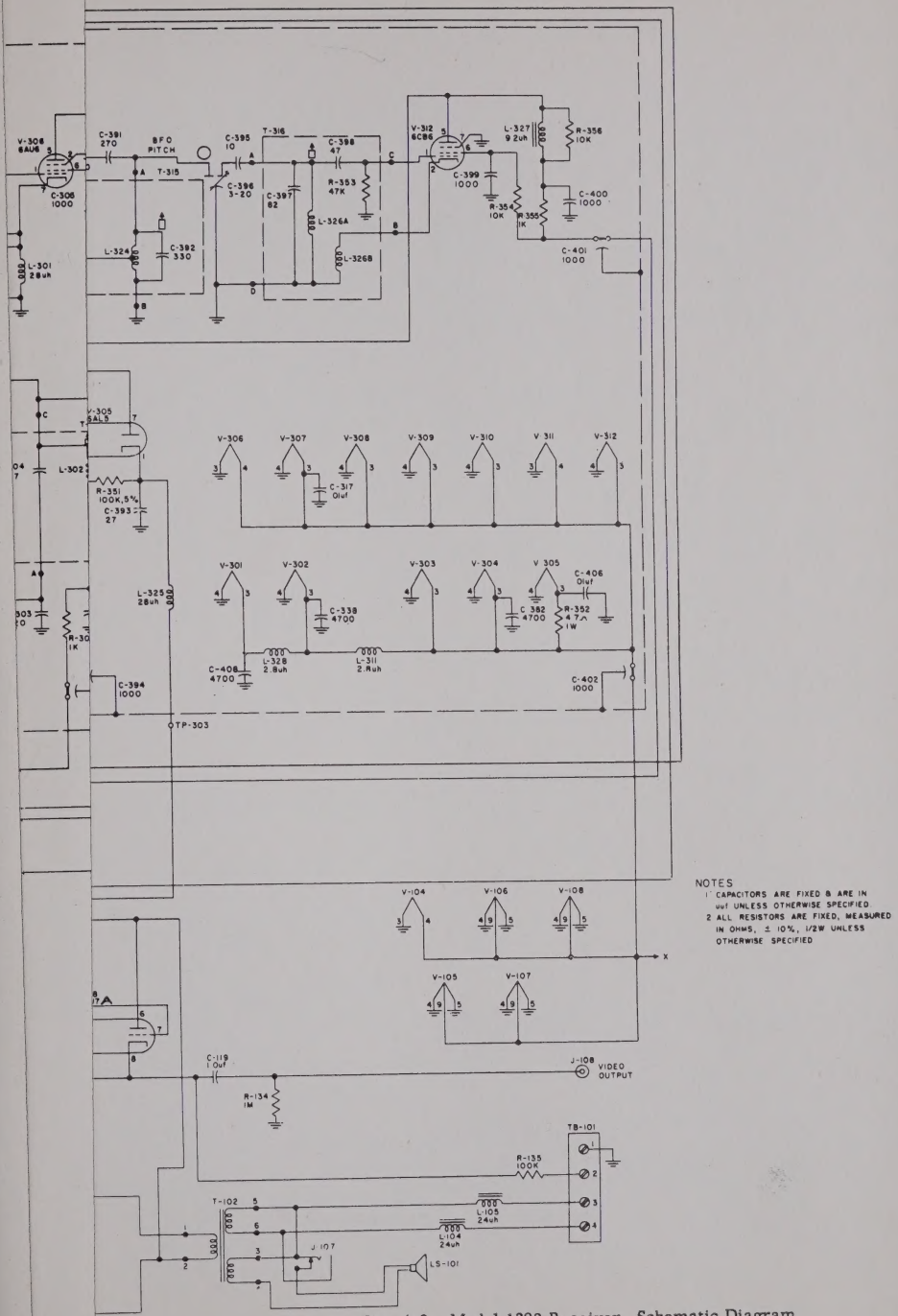


Fig. 4-8. Model 1301 Receiver, Schematic Diagram



NOTES
1. CAPACITORS ARE FIXED & ARE IN uuf UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE FIXED, MEASURED IN OHMS, ± 10%, 1/2W UNLESS OTHERWISE SPECIFIED

Fig. 4-9. Model 1302 Receiver, Schematic Diagram

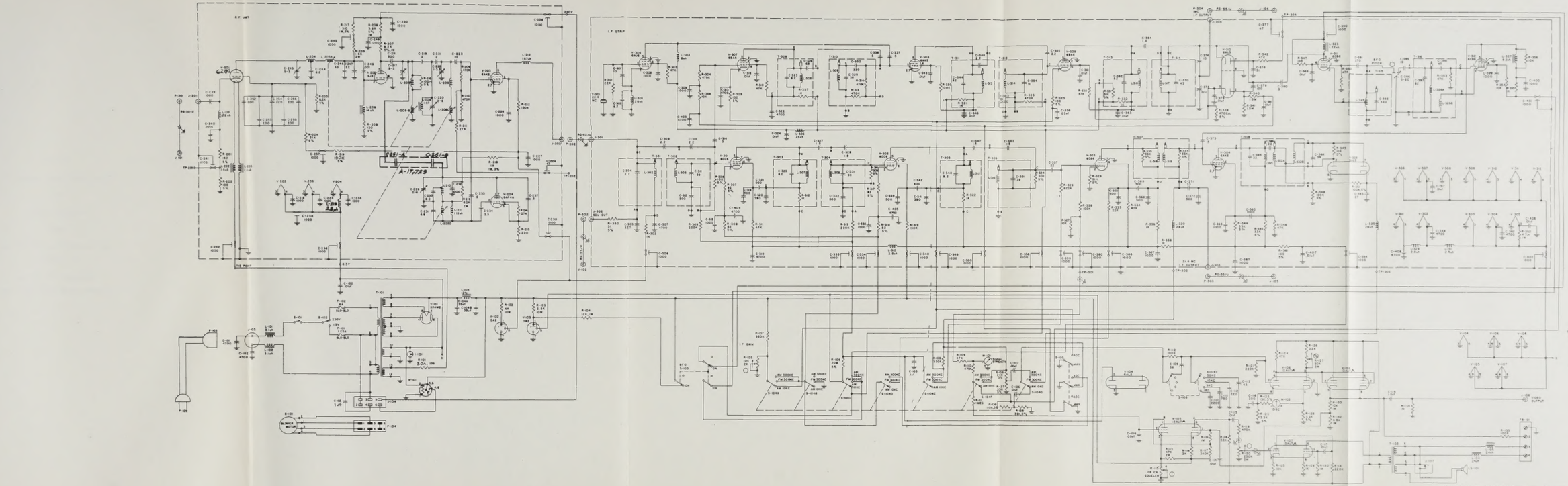


Fig. 4-9. Model 1302 Receiver, Schematic Diagram

PART II

REFERENCE DATA SUPPLEMENT

TO

INSTRUCTION BOOK

FOR

RECEIVER, COUNTERMEASURES

R-839/FLR-2

(Commercially Designated

Model 1302 Special Purpose Receiver)

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SECTION 1

GENERAL

This is a supplement to the instruction book for the R-839/FLR-2 Countermeasures Receiver, known commercially as the Model 1302 Special Purpose Receiver. Because the instruction book is of the commercial type, the purpose of this supplement is to furnish reference data and other essential information which will make the book suitable for Government use.

As the commercial title of the instruction book indicates, it covers two similar receivers, Models 1301 and 1302. The Model 1302 Receiver is electrically identical with the R-839/FLR-2 Receiver. All references to the Model 1302 Receiver found in the instruction book should be regarded as applicable to the R-839/FLR-2. All references to the Model 1301 Receiver only should be ignored. Only specific references to the Model 1302 Receiver, or to those features which are common to both the 1301 and 1302, are applicable to the R-839/FLR-2.

Any reference made to the parts list in the text of Part I should be construed as referring to the parts list contained herein. The schematic diagrams for the Models 1301 and 1302 Receivers are not applicable; neither are the illustrations pertaining to the Model 1301 Receiver only. This supplement contains the latest schematic diagram and parts list for the R-839/FLR-2 Receiver.

In physical appearance the R-839/FLR-2 Receiver is similar to the Model 1302 Receiver with two exceptions: The R-839/FLR-2 bears a standard Navy nameplate on the front panel instead of the manufacturer's commercial nameplate; also, in the R-839/FLR-2, the connector designated J-103 (on the rear apron of the chassis) is a three-pin Hubbell "Twistlock" type instead of the somewhat smaller two-pin connector illustrated on the Model 1302 Receiver.

The following sections, together with the general observations above, comprise the supplementary material necessary to the use and care of the R-839/FLR-2 Countermeasures Receiver.

SECTION 2

ADDENDA AND ERRATA TO INSTRUCTION BOOK

The following is a list of changes, additions and deletions to be made in the instruction book, as referenced herein:

1. Table 1-2. Tube Complement, page 1-3: Change V-101 from type 5R4WGY to type 5R4WGA; change V-201 from type 416B to Western Electric type 6280.

2. Page 2-2, par. 1a, line 7: Change "416B" to "Western Electric type 6280."

3. Page 2-3, par. 3b, line 1: Change "416b" to "Western Electric type 6280."

4. Page 2-4, lines 3, 6, 11, 13, and 17: Change "416b" to "Western Electric type 6280."

5. Page 3-1, last line: Change "416B" to "Western Electric type 6280."

6. Page 4-1, Section 4, par. 1, line 8: Change "416B" to "Western Electric type 6280."

7. Page 4, line 12: Change "Reference to the parts list (Section 5)-," to read "Reference to the parts list in the accompanying supplement-."

8. Table 4-1, Voltage measurements, page 4-8: Change V-201 from 416B to Western Electric type 6280; change V-101 from type 5R4WGY to type 5R4WGA.

Note: In addition to the changes in the text as stated above, certain small components have been added or deleted. These changes do not represent any basic differences in the circuitry of the receiver affecting theory, operation or maintenance, but have been made to improve performance within the existing design. The changes are shown on the new schematic in this supplement, as well as in the parts list.

SECTION 3

MAINTENANCE PARTS LIST

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
101-499		RECEIVER COUNTERMEASURES R-839/FLR-2: AM-FM-CW reception; 55-260 mc frequency range; operates from 115 or 230V AC, determined by two pos. toggle switch on rear apron of chassis; rack mounted 8-23/32 in. high by 19 in. wide by 16-7/8 in. dp approx.; 24 electron tubes; single superheterodyne circuit with function switch in AM 300 KC or FM pos., dual-conversion circuit with function switch in AM 10 KC pos; includes signal strength and FM tuning meters; moisture and fungus resistant; extra high sensitivity; NEMS-CLARKE drawing no. AC-16-706.	
B-101		FAN, CENTRIFUGAL: single unit operating on common shaft; direct drive connection; 1 stage; straight blade steel, plated finish, rotor; CW rotation; single inlet; moulded, plastic housing; fixed direction of discharge; rectangular outlet, 0.92 in. lg x 1.00 in. wd; air cooled, ball type bearing; supplied w/115V AC 60 cps, single phase electric motor; 70°C temp rise @ 400 cycles; –55°C to +85°C ambient temp; 4 CFM min. output at 3200 rpm; Air-Marine part no. A132-46.	Blower for V-201
C-101		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 4700 $\mu\mu$f MRC; ceramic case; 7/16 in. dia x 3/16 in. thk; 2 uninsulated wire lead type terminals; disc type; Sprague part no. 20C8.	AC Filter Capacitor
C-102		Same as C-101	AC Filter Capacitor
C-103		CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; 400V DC working; 1 μf ±10%; mineral oil filled and impregnated; hermetically sealed, uninsulated metal case; 3/4 in. dia x 2-7/16 in. lg; 2 wire lead type terminals 1-5/8 in. lg; non-removable mtg facilities included; mts by #6-32 screw in single chassis mtg hole; Pyramid part no. 4MPT1MR-1.	AC Filter Capacitor
C-104A, B	1	CAPACITOR, FIXED, ELECTROLYTIC: 2 section; 450V DC working each section; 35 μf each section; –40°C to +65°C working temp range; hermetically sealed, uninsulated metal case; 1-1/2 in. dia x 4-1/4 in. lg; 4 tube pin type terminals; non-removable mtg facilities included; mts in std octal socket; Sprague part no. CE52F350R.	AC Filter Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-105		CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; 200V DC working; 100,000 $\mu\mu$f ±20%; synthetic wax filled and impregnated; plastic case; 3/8 in. dia x 5/8 in. lg; 2 uninsulated wire lead type terminals; Aerovox type no. P-82.	AGC Time Constant
C-106		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 10,000 $\mu\mu$f MRC; ceramic case 19/32 in. dia x 5/32 in thk, 2 uninsulated wire lead type terminals; disc type; Erie type 811-.01.	Coupling Capacitor
C-107		Same as C-106	Coupling Capacitor
C-108	1	CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; 200V DC working; 50,000 $\mu\mu$f ±20%; synthetic wax filled and impregnated; plastic case; 3/8 in. dia x 5/8 in. lg; 2 uninsulated wire lead type terminals; Aerovox type no. P-82.	Bypass Capacitor
C-109		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 56 $\mu\mu$f ±5%; –20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E560J.	Frequency Compensator
C-110	1	CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 500V DC working; 2200 $\mu\mu$f ±5%; –200 to +200 parts per million per deg C temp coef; phenolic case; 13/16'' wide x 9/32'' high x 13/16'' lg; 2 uninsulated wire lead type terminals; Arco part no. CM30C222J.	Bypass Capacitor
C-111	1	CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 500V DC working; 750 $\mu\mu$f ±5%; –200 to +200 parts per million per deg C temp coef; phenolic case; 7/16 in. wd x 3/16 in. high x 47/64 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM20C751J.	Bypass Capacitor
C-112	1	CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 220 $\mu\mu$f ±5%; –20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. lg x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E221J.	Bypass Capacitor
C-113		CAPACITOR, FIXED MICA DIELECTRIC: 1 section 300V DC working; 43 $\mu\mu$f ±5%; –20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E430J.	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-114	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 600V DC working; 10,000 μμf +20%; phenolic case; 0.315 in. dia x 1.250 in.. lg; 2 uninsulated wire lead type terminals; Erie part no. GP3-333-103.	Coupling Capacitor
C-115		Same as C-114	Coupling Capacitor
C-116		CAPACITOR, FIXED MICA DIELECTRIC: 1 section; 300V DC working; 300 μμf ±5%; -20 to +100 parts per million per deg C temp coef; phenolic case 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E301J.	Bypass Capacitor
C-117		Same as C-106	Coupling Capacitor
C-118		NOT USED	
C-119		CAPACITOR, FIXED, PAPER DIELECTRIC: 1 section; 400V DC working; 1 μf +30% -20%; mineral oil filled and impregnated; hermetically sealed metal case; 3/4 in. dia x 2-5/16 in. lg; 2 uninsulated wire lead type terminals; mtg strap included; single 5/32 in. dia mtg strap included; single 5/32 in. dia mtg hole; Pyramid type no. 4 MPT1M.	Coupling Capacitor
C-120		Same as C-106	Bypass Capacitor
C-213		NOT USED	
C-213		NOT USED	
C-215		NOT USED	
C-216		NOT USED	
C-217		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: Compression type; 1 section; 0.5-3 μμf; 500V DC working; screw driver slot adjustment; ceramic base; 0.215 in. dia x 1/2 in. lg; single 5/32 in. dia mtg hole required; 2 wire lead type terminals; Centralab part no. 829-3.	Bypass Capacitor
C-218	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 1000V DC working 1000 μμf MRC; ceramic disc type case; 0.300 in. dia x 0.156 in. thk; 2 uninsulated wire lead type terminals; Sprague part no 40C30A2.	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-219	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working 2.0 $\mu\mu$f ±0.25 $\mu\mu$f; −250 to +250 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CK020C.	Coupling Capacitor
C-220		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: compression type; 1 section; 1-6 $\mu\mu$f; 500V DC working; screw driver slog adjustment; ceramic base; 0.215 in. dia x 5/8 in. lg; single 5/32 in dia mtg hole required; 2 wire lead type terminals; Centralab part no. 829-6.	Tuning Capacitor
C-221		Same as C-219	Coupling Capacitor
C-222		CAPACITOR, VARIABLE, CERAMIC DIELECTRIC: compression type; 1 section; 1-4 $\mu\mu$f; 500V DC working; screw driver slot adjustment; ceramic case; 0.215 in. dia x 1/2 in. lg; single 5/32 in. dia mtg hole required; 2 wire lead type terminals; Centralab part no. 829-4.	Tuning Capacitor
C-223	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 10 $\mu\mu$f ±1 $\mu\mu$f; −30 to +30 parts per million per deg C; ceramic case, 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CG100F.	Coupling Capacitor
C-224		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 47 $\mu\mu$f ±10%; metal case; 5/16 in. dia x 5/8 in. lg; 2 uninsulated wire lead type terminals; feed thru type; Sprague part no. 514C-11A.	Bypass Capacitor
C-225		Same as C-218	Bypass Capacitor
C-226		Same as C-218	Bypass Capacitor
C-227		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 1000 $\mu\mu$f MRC; ceramic case; 5/16 in. dia x 5/8 in. lg; 2 uninsulated wire lead type terminals; Sprague part no. 514C1.	Bypass Capacitor
C-228		Same as C.227	Bypass Capacitor
C-229		Same as C-220	Tuning Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-230	1	CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 8.2 $\mu\mu$f ±0.5 $\mu\mu$f; −250 to +250 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no CC20CK8R2D.	Bypass Capacitor
C-231	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working 6.8 $\mu\mu$f ±0.5 $\mu\mu$f; −60 to +60 parts per million per deg C; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CH6R8D.	Bypass Capacitor
C-232		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 1000 $\mu\mu$f MRC; metal case; 0.288 in. dia x 11/32 in. lg; 1 solder tab type terminal; Sprague part no. 507C2.	Bypass Capacitor
C-233		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 600V DC working; 0.5 $\mu\mu$f ±0.25 $\mu\mu$f; −120 to +120 parts per million per deg C; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Centralab part no. TCZ-5.	Coupling Capacitor
C-234		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 3.3 $\mu\mu$f ±0.25 $\mu\mu$f tolerance; −120 to +120 parts per million per deg C; ceramic case; 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CJ3R3C.	Coupling Capacitor
C-235		Same as C-218	Bypass Capacitor
C-236		Same as C-227	Bypass Capacitor
C-237		Same as C-233	Coupling Capacitor
C-238		Same as C-232	Bypass Capacitor
C-239		Same as C-218	Coupling Capacitor
C-240		Same as C-232	Bypass Capacitor
C-241		Same as C-227	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-242		Same as C-227	Bypass Capacitor
C-243		Same as C-217	Bypass Capacitor
C-244		Same as C-231	Bypass Capacitor
C-245		Same as C-227	Bypass Capacitor
C-246	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 33 $\mu\mu$f ±10%; −120 to +120 parts per million per deg C temp coef; ceramic case; 0.230 in. dia x 0.460 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC25CS330K.	Bypass Capacitor
C-247	1	CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 22 $\mu\mu$f ± 10%; − 120 to + 120 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CJ220K.	Bypass Capacitor
C-248		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 600V DC working; 1000 μf ±20%; ceramic case; 0.250 in. dia x 0.500 in. lg; 2 uninsulated wire lead type terminals; Centralab part no. D6-102.	Coupling Capacitor
C-249		Same as C-227	Bypass Capacitor
C-250		Same as C-227	Bypass Capacitor
C-251		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 500 $\mu\mu$f ±20%; phenolic case; 0.240 in. dia x 0.460 in. lg; 2 uninsulated wire lead type terminals; Erie part no. GP2-331-500-100.	Coupling Capacitor
C-252		CAPACITOR, FIXED SILVER MICA DIELECTRIC: 1 section; 500V DC working; 200 $\mu\mu$f ±10%; button type; metal case; 0.447 in. dia x 0.218 in. lg; 2 solder lug type terminals, 9/32 in. lg x 0.093 in. wd; Erie type no. 370-FA.	Bypass Capacitor
C-253		Same as C-252	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-254		Same as C-252	Bypass Capacitor
C-255		Same as C-252	Bypass Capacitor
C-256		Same as C-252	Bypass Capacitor
C-257		Same as C-227	Coupling Capacitor
C-258		Same as C-227	Coupling Capacitor
C-301		Same as C-223	Coupling Capacitor
C-302		Same as C-230	Bypass Capacitor
C-303		Same as C-112	Bypass Capacitor
C-304		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 4.7 $\mu\mu$f ±0.5 $\mu\mu$f; −250 to +250 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CK4R7D.	Primary Tuning Capacitor
C-305		Same as C-218	Bypass Capacitor
C-306		Same as C-227	Bypass Capacitor
C-307		Same as C-101	Bypass Capacitor
C-308	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 2.2 $\mu\mu$f ±0.1 $\mu\mu$f; −250 to +250 parts per million per deg C temp coefficient; ceramic case; 0.200 in. dia by 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie type NPOA.	Coupling Capacitor
C-309		Same as C-232	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-310		Same as C-308	Coupling Capacitor
C-311	1	CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 39 $\mu\mu$f ±5%; −60 to +60 parts per million per deg C temp coef; ceramic case 0.240 in. dia x 0.460 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC30HH390J.	Secondary Tuning Capacitor
C-312		Same as C-251	Secondary Tuning Capacitor
C-313		Same as C-101	Bypass Capacitor
C-314		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 3 $\mu\mu$f ±20%; −200 to +200 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15CO30M.	Coupling Capacitor
C-315		Same as C-232	Bypass Capacitor
C-316		Same as C-106	Bypass Capacitor
C-317		Same as C-106	Bypass Capacitor
C-318		Same as C-251	Bypass Capacitor
C-319		Same as C-101	Bypass Capacitor
C-320		CAPACITOR, FIXED, CERAMIC DIELECTRIF: 1 section; 600V DC working; 390 $\mu\mu$f ±10% phenolic case; 0.250 dia by 0.812 lg; 2 uninsulated wire lead type terminals; Erie part no. GP2K-391, cat no GP-390X.	Bypass Capacitor
C-321		Same as C-251	Coupling Capacitor
C-322		Same as C-101	Bypass Capacitor
C-323		Same as C-230	Primary Tuning Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-324		Same as C-106	Bypass Capacitor
C-325		Same as C-230	Primary Tuning Capacitor
C-326		CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 600V DC working; 68 $\mu\mu$f ±2%; −120 to +120 parts per million per deg C; ceramic case; 0.225 in. dia x 0.860 in. lg; 2 uninsulated wire lead type terminals; Centralab part no. TCZ-68.	Primary Tuning Capacitor
C-327	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 1.5 $\mu\mu$f ±0.1 $\mu\mu$f; −250 to +250 parts per million per deg C temp coefficient; ceramic case 0.200 in. dia by 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie type NPOA.	Coupling Capacitor
C-328		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 1.8 $\mu\mu$f ±0.1 $\mu\mu$f; −250 to +250 parts per million per deg C temp coefficient; ceramic case; 0.200 in. dia by 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie type NPOA.	Coupling Capacitor
C-329		Same as C-311	Secondary Tuning Capacitor
C-330		Same as C-251	Secondary Tuning Capacitor
C-331		Same as C-311	Secondary Tuning Capacitor
C-332		Same as C-251	Secondary Tuning Capacitor
C-333		Same as C-227	Bypass Capacitor
C-334		Same as C-227	Bypass Capacitor
C-335		Same as C-232	Bypass Capacitor
C-336		Same as C-233	Coupling Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-337		Same as C-233	Coupling Capacitor
C-338		Same as C-101	Bypass Capacitor
C-339		Same as C-251	Bypass Capacitor
C-340		Same as C-227	Bypass Capacitor
C-341		Same as C-320	Bypass Capacitor
C-342		Same as C-106	Coupling Capacitor
C-343		Same as C-106	Bypass Capacitor
C-344		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 62 $\mu\mu$f ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no CM15E620J.	Primary Tuning Capacitor
C-345		Same as C-106	Bypass Capacitor
C-346		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 2.2 $\mu\mu$f ±0.25 $\mu\mu$f; −120 to +120 parts per million per deg C temp coef; ceramic case 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CK2R2C.	Coupling Capacitor
C-347		Same as C-327	Coupling Capacitor
C-348		Same as C-230	Primary Tuning Capacitor
C-349		Same as C-227	Bypass Capacitor
C-350		Same as C-227	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-351		Same as C-311	Secondary Tuning Capacitor
C-352		Same as C-328	Coupling Capacitor
C-353		Same as C-106	Secondary Tuning Capacitor
C-354		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section: 300V DC working; 91 $\mu\mu$f ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire wire lead type terminals; Arco part no CM15E910J.	Secondary Tuning Capacitor
C-355		Same as C-346	Coupling Capacitor
C-356		CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 600V DC working; 30,000 $\mu\mu$f GMV; ceramic case; 29/32 in. dia; 2 uninsulated wire lead type terminals; disc type; Aerovox Hi-Q, type BPD.	Bypass Capacitor
C-357	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 22 $\mu\mu$f ±5%; −120 to +120 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CJ220J.	Coupling Capacitor
C-358		Same as C-227	Bypass Capacitor
C-359		Same as C-227	Bypass Capacitor
C-360		Same as C-227	Bypass Capacitor
C-361		Same as C-106	Bypass Capacitor
C-362		Same as C-344	Primary Tuning Capacitor
C-363		Same as C-106	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-364	1	CAPACITOR, FIXED CERAMIC DIELECTRIC: 1 section; 500V DC working; 1.5 μμf ±0.25 μμf; −250 to +250 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CK1R5C.	Coupling Capacitor
C-365		Same as C-251	Bypass Capacitor
C-366		Same as C-227	Bypass Capacitor
C-367		Same as C-232	Bypass Capacitor
C-368		Same as C-251	Bypass Capacitor
C-369		Same as C-251	Coupling Capacitor
C-370		Same as C-113	Secondary Tuning Capacitor
C-371	1	CAPACITOR, FIXED MICA DIELECTRIC: 1 section; 300V DC working; 33 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no CM15E330J.	Coupling Capacitor
C-372		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 500 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E501J.	Bypass Capacitor
C-373		Same as C-233	Coupling Capacitor
C-374		Same as C-223	Coupling Capacitor
C-375		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 100 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E101J.	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-376		Same as C-106	Bypass Capacitor
C-377		Same as C-224	Bypass Capacitor
C-378		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 51 $\mu\mu$f ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E510J.	Bypass Capacitor
C-379		Same as C-375	Coupling Capacitor
C-380		Same as C-233	Coupling Capacitor
C-381		Same as C-106	Bypass Capacitor
C-382		Same as C-101	Bypass Capacitor
C-383		Same as C-248	Bypass Capacitor
C-384		CAPACITOR FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 33 $\mu\mu$f ±10%; −120 to +120 parts per million per deg C temp coef; ceramic case; 0.200 in. dia x 0.400 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC20CJ330K	Primary Tuning Capacitor
C-385		Same as C-248	Coupling Capacitor
C-386		Same as C-357	Coupling Capacitor
C-387		Same as C-232	Bypass Capacitor
C-388		Same as C-311	Coupling Capacitor
C-389		Same as C-106	Bypass Capacitor
C-390		Same as C-227	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-391		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 270 μμf ±5% −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. RCM15E271J.	Coupling Capacitor
C-392	1	CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 330 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 7/32 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E331J.	Primary Tuning Capacitor
C-393	1	CAPACITOR, FIXED MICA DIELECTRIC: 1 section; 300V DC working; 27 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E270J.	Bypass Capacitor
C-394		Same as C-227	Bypass Capacitor
C-395		CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 300V DC working; 10 μμf ±5%; −200 to +200 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15C100J.	Coupling Capacitor
C-396		CAPACITOR, VARIABLE, AIR DIELECTRIC: plate meshing type; 1 sections; 2.7 to 19.3 μμf 850V AC peak voltage; 31 brass plates; shaft adjustment w/screwdriver slot; 1-43/64 in. lg x 5/8 in. wd x 3/4 in. high; 1/4 in. lg shaft; mtg bushing 1/4-32 in. thd x 1/4 in. lg; ceramic insulation between rotor and stator; 2 solder lug terminals; type 19MA11, E. F. Johnson catalog number 160-311.	Bypass Capacitor
C-397	1	CAPACITOR, FIXED, MICA DIELECTRIC: 1 section; 500V DC working; 82 μμf ±5%; −20 to +100 parts per million per deg C temp coef; phenolic case; 9/32 in. wd x 3/16 in. high x 1/2 in. lg; 2 uninsulated wire lead type terminals; Arco part no. CM15E820J.	Secondary Tuning Capacitor
C-398	1	CAPACITOR, FIXED, CERAMIC DIELECTRIC: 1 section; 500V DC working; 47 μμf ±10% − 60 to + 60 parts per million per deg C temp coef; ceramic case; 0.230 in. dia x 0.460 in. lg; 2 uninsulated wire lead type terminals; Erie part no. CC30CH470K	Secondary Tuning Capacitor
C-399		Same as C-218	Bypass Capacitor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
C-400		Same as C-232	Bypass Capacitor
C-401		Same as C-227	Bypass Capacitor
C-402		Same as C-227	Bypass Capacitor
C-403		Same as C-101	Bypass Capacitor
C-404		Same as C-101	Bypass Capacitor
C-405		Same as C-101	Bypass Capacitor
C-406		Same as C-106	Bypass Capacitor
C-407		Same as C-106	Bypass Capacitor
C-408		Same as C-101	Bypass Capacitor
F-101		FUSE, CARTRIDGE: 1.25 amp. 125V; Slo Blo operation; ferrule type terminals; glass body; one-time action; 1/4 in. dia x 1-1/4 in. lg; Bussman part no. MDL-1.25	Panel Fuse
F-102		FUSE, CARTRIDGE: 0.6 amp, 125V Slo-Blo operation; ferrule type terminals; glass body; one-time action; 1/4 in. dia x 1-1/4 in. lg; Bussman part no. MDL-0.6	Panel Fuse
I-101		LAMP, INCANDESCENT: 6 to 8V, 0.15 amp; min. bayonet base; T-3-1/4 bulb; clear glass; 2 S-6 tungsten filaments; 1-1/8 in. lg; indefinite long life; any burning position; G. E. part no. 47	Filament Lamp
J-101		CONNECTOR, RECEPTACLE: 1 female contact; one connector mating end; low loss plastic insulation; straight shape; 1-7/8 in. lg x 1 in. wd x 1 in. high; copper base alloy shell, precious metal plated; resistant to corrosion; 5/8-24 coupling thd; accommodates RG-55-U and RG-58/U coaxial cable; IPC part no. 36000.	Antenna Input Connector
J-102	1	CONNECTOR, RECEPTACLE: 1 female contact; one connector mating end; low loss plastic insulation; straight shape; 1-1/32 in. lg x 3/4 in. wd x 3/4 in. high; copper base alloy shell; precious metal plated; resistant to corrosion; bayonet latch type locking; type no. UG-262/U, IPC part no. 2000.	Pan. Output Connector

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
J-103		CONNECTOR, RECTACLE: 3 male contacts; one connector mating end; straight shape, flush panel mtg; 1 in. lg x 1.218 in. dia x 2.062 in. across mtg flanges; brass shell; black bakelite insulation; "twistlok" type locking method; Hubbell part no. 7486.	AC input Connector
J-104		CONNECTOR, RECEPTACLE: 6 female contacts; one connector mating end; plastic insulation; straight - shape; 1 in. lg x 11/16 in. wd x 1/2 in. high; plastic body; non-locking type; Jones part no. S-306-AB.	Blower Connector
J-105	1	JACK, PANEL: straight type; one female contact; designed for use with RG-55/U and RG-58/U cables; brass, silver plated body; bayonet type connecting; mounts in .437 in. dia hole; secured by four #3-56 screws in .50 in. centers; 13/32" dia by 1-1/32 in. lg; type no. RG-291/U; Amphenol part no. 31-001.	IF output Connector
J-106		Same as J-105	IF Output Connector
J-107	1	JACK, TELEPHONE: spring leaf type contacts, form B contact arrangement; 1-9/32 in. lg x 3/4 in. dia; accommodates two-conductor plug 0.250 in. dia x 1.218 in. lg; single mtg bushing, 3/8-32 thd x 0.276 in. lg; accommodates panel 0.163 in. thk; solder wire attachment method; type no. JJ-089; Switchcraft part no. C-12A.	Audio Phone Jack
J-108	1	CONNECTOR, RECEPTACLE: 1 female contact; one connector mating end; low loss plastic insulation; straight shape; 1-1/16 in. lg x 11/16 in. wd x 11/16 in. high; copper base alloy shell; precious metal plated; resistant to corrosion; bayonet latch type locking; type no. UG-290/U, IPC part no. 2700.	Video Output Connector
J-201		CONNECTOR, RECEPTACLE: 1 female contact; one connector mating end; straight shape; 1-1/16 in. lg x 1/2 in. dia; brass shell; precious metal plated; bayonet latch type locking method; Amphenol part no. 31-214, modified per NEMS-CLARKE dwg no. A-14,777	Antenna Input Connector
J-202		Same as J-201	RF to IF Connector
J-203		Same as J-201	Test Point

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
J-301	1	BOX CONNECTOR, ELECTRICAL: straight type; designed for 0.242 in. dia cable; designed for use with RG-59/U and RG-62/U coaxial cable; brass, silver plated body; straight, external connection thread; mts in 5/16 in. dia hole; cable secured by clamping nut; 7/16 in. dia x 13/16 in. lg; type no. MX-1530, IPC part no. 1050	IF to RF Connector
J-302		Same as J-301	Pan Output Connector
J-303		Same as J-301	21.4 MC IF Output Connector
J-304		Same as J-301	1 meg IF Output Connector
K-101		RELAY, THERMAL TIME DELAY: single pole double throw contacts, form 1C, rated at 2 amps 230V AC; 6.3V AC operating voltage; 6 terminals on contacts; 2 terminals on heater; continuous duty; hermetically sealed; 3/4 in. dia x 2-25/32 in. lg; standard 9 pin miniature plug mtg; Curtis-Wright part no. 6.3-90-C	Time Delay Relay
L-101		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 20 turns close wound, #22 Phelps-Dodge "sodereze" wire; 3.1 μh at 65 mc wound on Stackpole coil form #A9365-62; 2 wire lead type terminals; NEMS-CLARKE part/dwg no. A-15,060.	Filter
L-102		Same as L-101	Filter
L-103		REACTOR: fixed inductance; single coil, 12 hy. inductance, 150 ma dc, 150 ohms dc resistance; 2500V rms test; hermetically sealed, metal case; 3-1/2 in. lg x 3 in. w x 4-7/8 in. high; four no. 8-32 thd mtg studs on 2-1/8 in. x 2-3/8 in. mtg centers; 2 solder lug type terminals, located on bottom; NEMS-CLARKE dwg no. AB-17, 117-1	Filter
L-104		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 20 turns close wound, #32 Phelps-Dodge "sodereze" wire; 24 μh at 65 mc; wound on Stackpole coil form AP-11-181-G2; 2 wire lead type terminals; NEMS-CLARKE part/dwg no. A-15,056	R. F. Choke
L-105		Same as L-104	R. F. Choke

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
L-201		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 23 turns; #30 AWG HF wire; 0.72 μh at 25 mc; phenolic coil form; 0.150 in. dia x 0.500 in. lg excluding terminals; 2 wire lead type terminals, terminal mtd; NEMS-CLARKE part/dwg no. A-14,734	R. F. Choke
L-202		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 40 turns; #30 AWG HF wire; 14 μh; powered iron coil form; 0.210 in. dia x 0.625 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,735	R. F. Choke
L-203		Same as L-202	Filament Choke
L-204	2	INDUCTANCE; fixed; brass strap	End Inductor
L-205		TUNER, RADIO FREQUENCY: variable inductance tuning; 54 to 216 mc frequency range; cadmium plated steel case; 8 solder lug type terminals, located on bottom; 5-7/8 in. lg x 2-5/8 in. wd x 2 in. high; four 1/8 in. dia mtg holes on 1-3/8 in. x 2-3/8 in. mtg centers; Mallory part no. 8304, as modified per NEMS-CLARKE dwg no. B-14,961.	Tuning Coil
L-206		Same as L-202	R. F. Choke
L-207	2	INDUCTANCE: adjustable; consists of two parallel brass straps approx. 1/4 in. apart; tuned by varying spacing between straps	Peaking Coil
L-208		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 18 turns; #AWG HF wire; 1.67 μh at 7.9 mc; powdered iron coil form; 0.125 in dia x 0.312 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,737	Coupling Inductor
L-209		Same as L-207	End Inductor
L-210		Same as L-204	Oscillator Coil
L-211		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 23 turns; #30 AWG EC wire; 1.15 μh at 7.9 mc; phenolic coil form 0.200 in. dia x 0.625 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,806.	Oscillator Coil

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
L-301		COIL, RADIO FREQUENCY: 1 winding; universal Wound; 90 turns; #38 AWG SNE wire; 28 μh at 21.4 mc; 3900 ohms dc resistance; 75 ma; phenolic coil form; 1/4 in. dia x 0.375 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,804	R. F. Choke
L-302	2	COIL, RADIO FREQUENCY: part of T-301; per NEMS-CLARKE part/dwg no. A-14,792; not separately replaceable	Coil for T-301
L-303	2	COIL, RADIO FREQUENCY: part of T-302; per NEMS-CLARKE part/dwg no. A-14,791; not separately replaceable.	Coil for T-302
L-304		COIL, RADIO FREQUENCY: 1 winding; universal wound; 55 turns #38 AWG SNE wire; 8 μh at 22.4 mc; Speer coil form CF-B107 x 3/8 lg; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-15,059	Peaking Coil
L-305	2	COIL, RADIO FREQUENCY: part of T-309; per NEMS-CLARKE part/dwg no. A-14,984; not separately replaceable	Coil for T-309
L-306		Same as L-104	R. F. Choke
L-307	2	COIL, RADIO FREQUENCY: part of T-303; per NEMS-CLARKE part/dwg no. A-14,984; not separately replaceable	Coil for T-303
L-308	2	COIL, RADIO FREQUENCY: part of T-304; per NEMS-CLARKE part/dwg no. A-14,791; not separately replaceable.	Coil for T-304
L-309	2	COIL, RADIO FREQUENCY: part of T-310; per NEMS-CLARKE part/dwg no. A-14,791; not separately replaceable.	Coil for T-310
L-310		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 40 turns; #30 AWG FC wire; 2.5 μh at 184 mc; 0.22 ohms dc resistance; phenolic coil form; 1/4 in. dia x 5/8 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,805	R. F. Choke

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
L-311		COIL, RADIO FREQUENCY: 1 winding; single layer wound; 22 turns of Phelps-Dodge #26 "sodereze" wire close wound; wound on Spear #IF-B-156 x 1/2 type "J" iron coil form; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-16,625	R. F. Choke
L-312	2	COIL, RADIO FREQUENCY: part of T-305; per NEMS-CLARKE part/dwg no. A-14,984; not separately replaceable.	Coil for T-305
L-313	2	COIL, RADIO FREQUENCY: part of T-311; per NEMS-CLARKE part/dwg no. A-15,378; not separately replaceable.	Coil for T-311
L-314	2	COIL, RADIO FREQUENCY: part of T-312; per NEMS-CLARKE part/dwg no. A-15,096; not separately replaceable.	Coil for T-312
L-315	2	COIL, RADIO FREQUENCY: part of T-306; per NEMS-CLARKE part/dwg no. A-14,791; not separately replaceable.	Coil for T-306
L-316	2	COIL, RADIO FREQUENCY: part of T-313 per NEMS-CLARKE part/dwg no. A-15,378; not separately replaceable.	Coil for T-313
L-317	2	COIL, RADIO FREQUENCY: part of T-314; per NEMS-CLARKE part/dwg no. A-15,097; not separately replaceable.	Coil for T-314
L-318	2	COIL, RADIO FREQUENCY: part of T-307; per NEMS-CLARKE part/dwg no. A-14,789; not separately replaceable.	Coil for T-307
L-319	2	COIL, RADIO FREQUENCY: part of T-307; per NEMS-CLARKE part/dwg no. A-14,790; not separately replaceable.	Coil for T-307
L-320		Same as L-301	R. F. Choke
L-321	2	COIL, RADIO FREQUENCY: part of T-308; per NEMS-CLARKE part/dwg no. A-14,788; not separately replaceable.	Coil for T-308
L-322, A, B,	2	COIL, RADIO FREQUENCY: part of T-308; per NEMS-CLARKE part/dwg no. A-14,787; not separately replaceable.	Coil for T-308

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
L-323	2	COIL, RADIO FREQUENCY: 1 winding; universal wound; 300 turns #38 AWG SNE wire; 1.22 μh; 19 ohms D. C. resistance; Stackpole coil form AP-11-181-G2; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. AA-15,058	Plate Choke
L-324	2	COIL, RADIO FREQUENCY: part of T-315; per NEMS-CLARKE part/dwg no. A-15,105; not separately replaceable.	Coil for T-315
L-325		Same as L-301	R. F. Choke
L-326, A, B,	2	COIL, RADIO FREQUENCY: part of T-316; per NEMS-CLARKE part/dwg no. A-14,786; not separately replaceable.	Coil for T-316
L-327		COIL, RADIO FREQUENCY: 1 winding; Single layer wound; 38 turns; #32 AWG SF wire; 9.2 μh at 7.9 MC; powdered iron coil form; 0.160 in. dia x 0.500 in. lg excluding terminals; 2 wire lead type terminals; terminal mtd; NEMS-CLARKE part/dwg no. A-14,807	Peaking Coil
L-328		Same as L-311	R. F. Choke
LS-101	1	LOUDSPEAKER, DYNAMIC: permanent magnet field 3.2 ohms voice coil impedance; 3W normal input; diaphragm type; output transformer not included; 4-3/32 in. lg x 4-3/32 in. wd x 1-11/16 in. dp; four 3/16 in. dia mtg holes on 3-5/16 in. x 3-5/16 in. mtg centers; RCA part no. XS-7874A, per RCA dwg no. 502640-503.	Panel Speaker
M-101	1	AMMETER: panel mtg; 100-0-100 Microamp DC; rd flush mtg metal case; medalist flange; 2-3/4 in. wide x 2-3/4 in. high; 2-3/16 in. dia x 2 in. dp; calibrated for non-magnetic panel; black pointer and scale markings, white background; three mtg studs no. 4-40 x 1/2 in. lg on 1.22 radius spaced 120° apart; 2 binding post type terminals, 8-32 thd x 1/2 in. lg; hermetically sealed; Marion part no. HM-2	Signal Strength Meter
M-102	1	AMMETER: same as M-101 except 0-50 microamp DC scale and movement	Tuning Indicator
O-101		KNOB: set screw type positive gripping surface; rd. phenolic body; 1-5/32 in. lg x 1-1/16 in. wd x 5/8 in. dp; integrally molded skirt, curved shank; accommodates 1/4 in. dia rd. shaft; shaft hole 1/2 in. dp; 2 socket type set screws; black brass insert integrally molded pointer; 5/8 in. from center line of shaft hole to end of pointer; Molded Insulation part VIZ no. A.	Panel Control Knob

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
O-102		Same as O-101	Panel Control Knob
O-103		Same as O-101	Panel Control Knob
O-104		Same as O-101	Panel Control Knob
O-105		Same as O-101	Panel Control Knob
O-106		Same as O-101	Panel Control Knob
O-107		Same as O-101	Panel Control Knob
O-108		Same as O-101	Panel Control Knob
O-109		KNOB: set screw type positive gripping surface; rd phenolic body; 1-1/2 in. dia x 15/16 in. lg; integrally molded skirt; curved shank; accommodates 1/4 in. dia rd shaft; shaft hole 1/2 in. dp; 2 socket type set screws; black; brass insert; Molded Insulation part VIZ no. E, as modified per NEMS-CLARKE dwg no. A-14,825	Panel Control Knob
P-101		NOT USED	
P-102		NOT USED	
P-103		CONNECTOR, PLUG: 3 female contacts; one connector mating end; rated 10 amp at 250V, 15 amp at 125V; plastic insulation; straight shape; 1-5/32 in. dia x 1-1/4 in. lg; plastic body; polarized; twist locking type; accommodates cable 1/2 in. dia; Hubbell part no. 7484	A. C. Input Connector
P-104		CONNECTOR, PLUG: 6 male contacts; one connector mating end; plastic insulation, straight shape; 1 in. lg x 11/16 in. wide by 1-1/8 in. high partially enclosing ferrous metal shell; resistant to corrosion; non-locking type; accommodates 3/8 in. dia cable; Jones part no. P-306-CCT.	Blower Connector
P-105		NOT USED	

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
P-106		NOT USED	
P-107		NOT USED	
P-108		NOT USED	
P-109		CONNECTOR, PLUG: 3 male contacts; one connector mating end; rated 15 amp at 105 to 125V AC; plastic insulation; straight shape; 1-17/32 in. lg by 23/32 in. wd by 1-1/4 in. high, including cable clamp; metal body; nonlocking; accommodates cable to 15/32 in. one contact removable for use with standard convenience outlet; type no. UP121M	A. C. Input Connector
P-201	1	CONNECTOR, PLUG: one male contact; one connector mating end; low loss plastic insulation; straight shape; 31/32 in. lg x 27/63 in. dia; copper base alloy shell; precious metal plated; resistant to corrosion; bayonet latch type locking; type no. UG-88/U; IPC part no. 1200	Antenna Input Connector
P-202	1	CONNECTOR, PLUG: 1 male contact; one connector mating end; low loss plastic insulation; straight shape 31/32 in. lg x 27/64 in. dia; copper base alloy shell; precious metal plated; resistant to corrosion; bayonet latch type locking; type UG-260/U; IPC part no. 3100	R. F. to I. F. Connector
P-301		NOT USED	Pan Output Connector
P-302		Same as P-202	21.4 MC IF Output Connector
P-304		Same as P-201	1 Meg Output Connector
R-101	1	RESISTOR, FIXED, WIREWOUND: inductive winding; 3.5 ohms ±5%; 10W power rating; 275°C max continuous temp; rated at 25°C ambient temp; vitreous enamel covered; 19/32 in. OD x 1-1/2 in. lg; resistant to moisture after thermal shock in air; 2 tab type terminals; Sprague part no. SP-RW31G3R5.	Filament Dropping Resistor
R-102	1	RESISTOR, FIXED, WIREWOUND: inductive winding; 4000 ohms ±10%; 10W power rating; 300° max continuous operating temp; rated at 40°C ambient temp; vitrious enamel covered; 5/16 in. OD x 1-3/4 in. lg; resistant to humidity; 2 tab with wire lead type terminals; Ohmite type no. 10W Brown Devil.	Plate Dropping

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-103		RESISTOR, FIXED, WIREWOUND: inductive winding; ohms ±10%; 10W power rating; 300°C max continuous operating temp; rated at 40°C ambient temp; vitreous enamel covered; 5/16 in. OD x 1-3/4 in. lg; resistant to humidity; 2 tab with wire lead type terminals; Ohmite type no. 10W Brown Devil.	Plate Dropping Resistor
R-104	1	RESISTOR, FIXED, COMPOSITION: 12,000 ohms ±10%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB1231	Plate Dropping Resistor
R-105	1	RESISTOR, VARIABLE: composition element; 10, 10,000 ohms ±20%; 2W power rating; std A taper, Ref Dwg Group 3; 3 solder lug type terminals; phenolic body; enclosed metal case; 1-1/16 in. high x 1-1/16 in. wd x 9/16 in. deep; 1/4 in. dia, rd, metal shaft, 3/4 in. lg from mtg surface; normal torque; insulated contact arm; no off position; mtd by single 3/8-32 thd x 3/8 in. lg bushing; non turn device on 17/32 in. radius at 9 o'clock; Allen Bradley part no. JU1032	I.F. Gain Control
R-106	1	RESISTOR,'FIXED COMPOSITION: 20 megohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradey part no. EB2065	AGC – Delay
R-107	1	RESISTOR, FIXED COMPOSITION: 330,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB3341.	Bias Divider
R-108		Same as R-107	Voltage Dropping Resistor
R-109	1	RESISTOR, FIXED COMPOSITION: 47,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB4731.	Voltage Dropping Resistor
R-110	1	RESISTOR, FIXED COMPOSITION: 470,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB4741.	Voltage Dropping Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-111	1	RESISTOR, FIXED COMPOSITION: 1 megohm ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1055	Grid Resistor
R-112	1	RESISTOR, FIXED COMPOSITION: 100,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1041.	Grid Resistor
R-113	1	RESISTOR, FIXED COMPOSITION: 47,000 ohms ±10%; 2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.312 in. dia x 0.688 in. lg; 2 wire lead type terminals; Allen Bradley part no. HB4731.	Cathode Bias Resistor
R-114	1	RESISTOR, FIXED COMPOSITION: 2000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2021.	Cathode Bias Resistor
R-115		Same as R-105	Squelch Control
R-116		Same as R-111	Grid Resistor
R-117	1	RESISTOR, FIXED COMPOSITION: 240,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; terminals; Allen Bradley part no. EB2445.	Grid Resistor
R-118	1	RESISTOR, FIXED COMPOSITION: 22,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2231.	Plate Loading Resistor
R-119		Same as R-110	Grid Resistor
R-120	1	RESISTOR, VARIABLE: composition element; 250,000 ohms ±10%; 2W power rating; std A taper, Ref Dwg Group 3; 3 solder lug type terminals; phenolic body; enclosed metal case 1-1/16 in. high x 1-1/16 in. wd x 9/16 in. dp; 1/4 in. dia, rd, metal shaft, 3/4 in. lg from mtg surface; normal torque; insulated contact arm; no off position; mtd by single 3/8-32 thd x 3/8 in. lg bushing; non turn device on 17/32 in. radius at 9 o'clock; Allen Bradley part no. JA2541.	Audio Gain Control

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-121	1	RESISTOR, FIXED COMPOSITION: 220,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.135 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2241.	Grid Resistor
R-122	1	RESISTOR, FIXED COMPOSITION: 15,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1535.	Dropping Resistor
R-123	1	RESISTOR, FIXED COMPOSITION: 3300 ohms ±5% 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB3325.	Cathode Bias Resistor
R-124		Same as R-109	Plate Loading Resistor
R-125	1	RESISTOR, FIXED COMPOSITION: 10,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1031.	Cathode Bias Resistor
R-126		Same as R-118	Plate Dropping Resistor
R-127	1	RESISTOR, VARIABLE: composition element 50,000 ohms ±10%; 2W power rating; std A taper, Ref Dwg Group 3; 3 solder lug type terminals; phenolic body; enclosed metal case; 1-1/16 in. high x 1-1/16 in. wd x 9/16 in. deep; 1/4 in. dia, rd, screwdriver slotted, metal shaft, 5/8 in. lg from mtg surface; normal torque; w/shaft locking device insulated contact arm; no off position; mtd by single 3/8-32 thd x 1/2 in. lg bushing; non-turn device located on 17/32 in. radius at 9 o'clock; Allen Bradley part no. JLU-5031.	Discriminator Balance
R-128		Same as R-123	Cathode Bias Resistor
R-129	1	RESISTOR, FIXED COMPOSITION: 1000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1021.	Cathode Bias Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-130		Same as R-111	Grid Resistor
R-131		Same as R-121	Plate Loading Resistor
R-132	1	RESISTOR, FIXED COMPOSITION: 6800 ohms ±10%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB6821	Cathode Bias Resistor
R-133	1	RESISTOR, FIXED COMPOSITION: 10,000 ohms ±10%; 1W power dissipation; rated at 70°C ambient temp; resistant temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB1031.	Cathode Bias Resistor
R-134		Same as R-111	Terminating Resistor
R-135		Same as R-112	Decoupling Resistor
R-136	1	RESISTOR, FIXED COMPOSITION: 24,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2435	Voltage Divider
R-137		Same as R-136	Voltage Divider
R-138	1	RESISTOR, FIXED COMPOSITION: 110,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1145.	Voltage Divider
R-139	1	RESISTOR, FIXED COMPOSITION: 39,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB3935	Voltage Divider
R-201	1	RESISTOR, FIXED COMPOSITION: 160 ohms ±5%; 1/2W power dissipation rated at 70°C ambient temp; resistance temperature characteristic F; insulated body 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1615.	Cathode Bias Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-202	1	RESISTOR, FIXED COMPOSITION: 100 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1015.	Cathode Bias Resistor
R-203	1	RESISTOR, FIXED COMPOSITION: 8,200 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB8225	Grid Divider
R-204	1	RESISTOR, FIXED COMPOSITION: 51,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB5135.	Grid Bias Divider
R-205	1	RESISTOR, FIXED COMPOSITION: 1500 ohms ±5%; 2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.312 in. dia x 0.688 in. lg; 2 wire lead type terminals; Allen Bradley part no. HB1525	Plate Loading Resistor
R-206	1	RESISTOR, FIXED COMPOSITION: 5600 ohms ±5%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB5625	Plate Dropping Resistor
R-207	1	RESISTOR, FIXED COMPOSITION: 6200 ohms ±5%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB6225.	Plate Loading Resistor
R-208	1	RESISTOR, FIXED COMPOSITION: 120 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no EB1215	Cathode Bias Resistor
R-209		Same as R-110	Grid Resistor
R-210		Same as R-110	Grid Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-211	1	RESISTOR, FIXED COMPOSITION: 27,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2731.	Decoupling Resistor
R-212	1	RESISTOR, FIXED COMPOSITION: 150,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1541.	Screen Dropping Resistor
R-213	1	RESISTOR, FIXED COMPOSITION: 8200 ohms ±10%; 2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.312 in. dia x 0.688 in. lg; 2 wire lead type terminals; Allen Bradley part no. HB8221	Plate Dropping Resistor
R-214		Same as R-211	Grid Bias Resistor
R-215	1	RESISTOR, FIXED COMPOSITION: 220 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2211	Cathode Bias Resistor
R-216		Same as R-202	Parasitic Suppressor
R-217	1	RESISTOR, FIXED COMPOSITION: 510 ohms, 5%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB5115.	Plate Dropping Resistor
R-218	1	RESISTOR, FIXED COMPOSITION: 1000 ohms ±5%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB1025.	Decoupling Resistor
R-219	1	RESISTOR, FIXED COMPOSITION: 100,000 ohms, ±5%; 1/2W power dissipation rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0,140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1045.	Decoupling Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-301		Same as R-118	Grid Bias Resistor
R-302		Same as R-129	Plate Decoupling Resistor
R-303		Same as R-109	Screen Dropping Resistor
R-304		Same as R-110	Grid Resistor
R-305		Same as R-121	AGC Decoupling Resistor
R-306	1	RESISTOR, FIXED COMPOSITION: 10,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1035	Load Resistor
R-307	1	RESISTOR, FIXED COMPOSITION: 82 ohms ± 5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB8205	Cathode Bias Resistor
R-308		Same as R-307	Cathode Bias Resistor
R-309		Same as R-202	Cathode Bias Resistor
R-310		Same as R-109	Screen Dropping Resistor
R-311		Same as R-109	Screen Dropping Resistor
R-312		Same as R-129	Plate Decoupling Resistor
R-313		Same as R-110	Grid Bias Resistor
R-314		Same as R-110	Grid Bias Resistor
R-315		Same as R-121	AGC Decoupling

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-316	1	RESISTOR, FIXED COMPOSITION: 20,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB2035.	Load Resistor
R-317		Same as R-307	Cathode Bias Resistor
R-318		Same as R-307	Cathode Bias Resistor
R-319	1	RESISTOR, FIXED COMPOSITION: 150,000 ohms ±5%; 1/2W power dissipatio; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1545.	Screen Dropping Resistor
R-320		Same as R-112	Screen Dropping Resistor
R-321		Same as R-129	Plate Decoupling Resistor
R-322		Same as R-129	Plate Decoupling Resistor
R-323		Same as R-110	AGC Decoupling Resistor
R-324	1	RESISTOR, FIXED COMPOSITION: 30,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB3035	Load Resistor
R-325		Same as R-202	Cathode Bias Resistor
R-326	1	RESISTOR, FIXED COMPOSITION: 820,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB8241.	Grid Resistor
R-327		Same as R-125	Voltage Divider
R-328		Same as R-112	Voltage Divider

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-329	1	RESISTOR, FIXED COMPOSITION: 51 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB5105	Cathode Bias Resistor
R-330		Same as R-109	Screen Dropping Resistor
R-331	1	RESISTOR, FIXED COMPOSITION: 51,000 ohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB5131	Voltage Divider
R-332		Same as R-129	Plate Decoupling Resistor
R-333		Same as R-118	Screen Dropping Resistor
R-334		Same as R-109	Screen Divider
R-335	1	RESISTOR, FIXED COMPOSITION: 33,000 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB3335	Load Resistor
R-336		Same as R-129	Plate Decoupling Resistor
R-337		Same as R-335	Load Resistor
R-338		NOT USED	
R-339	1	RESISTOR, FIXED COMPOSITION: 4700 ohms ±5%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB4725	AGC Delay Resistor
R-340	1	RESISTOR, FIXED COMPOSITION: 1.5 megohms ±10%; 1/2W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.140 in. dia x 0.375 in. lg; 2 wire lead type terminals; Allen Bradley part no. EB1551	AGC Load Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-341		Same as R-340	AGC Load Resistor
R-342		Same as R-109	Detector Loading Resistor
R-343		NOT USED	
R-344		Same as R-335	Screen Dropping Resistor
R-345		Same as R.335	Plate Dropping Resistor
R-346		Same as R-109	Plate Divider
R-347		Same as R-125	Screen Dropping Resistor
R-348		Same as R-219	Discriminator Loading Resistor
R-349		Same as R-219	Loading Resistor
R-350		Same as R-109	Grid Bias Resistor
R-351		Same as R-348	Discriminator Loading Resistor
R-352	1	RESISTOR, FIXED COMPOSITION: 4.7 ohms ±10%; 1W power dissipation; rated at 70°C ambient temp; resistance temperature characteristic F; insulated body; 0.225 in. dia x 0.562 in. lg; 2 wire lead type terminals; Allen Bradley part no. GB4R71	Filament Dropping Resistor
R-353		Same as R-109	Dropping Resistor
R-354		Same as R-125	Screen Dropping Resistor
R-355		Same as R-129	Plate Dropping Resistor
R-356		Same as R-125	Loading Resistor

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
R-357		Same as R-129	Decoupling Resistor
R-358		Same as R-129	B+ Decoupling Resistor
R-359		Same as R-125	Decoupling Resistor
R-360		Same as R-329	Source Resistor
R-361		Same as R-2ϕ2	Decoupling Resistor
S-101	1	SWITCH, TOGGLE, SPST: 2 switching positions; phenolic body; 1-9/64 in. lg by 41/64 in. wd x 11/16 in. high; 11/16 in. lg bat handle; 2 solder lug type terminals; single mtg bushing 15/32-32 thd x 15/32 in. lg Herman H. Smith part no. 520	ON-OFF Switch
S-102	1	SWITCH, TOGGLE, SPDT: 2 switching positions; phenolic body; 1-9/64 in. lg by 41/64 in. wd by 11/16 in. high; 11/16 in. lg bat handle; 3 solder-lug type terminals; single mtg bushing 15/32-32 thd by 15/32 in. lg; Herman H. Smith part no. 521.	115 - 230V Selector Switch
S-103		SWITCH, ROTARY: sectional type; 1 section; 2 switching positions max; adjustable stop; non-pile-up type; rated 125V AC @ 3 amp nominal load; shorting type contacts; silver plated brass contacts; phenolic insulation; 11/16 in. lg by 1-5/16 in. wd by 1-1/4 in. high; single 3/8-32 thd by 3/8 in. lg mtg bushing; 1/4 in. dia shaft rod by 3/4 in. lg; solder lug type terminals; NEMS-CLARKE part/dwg no. A-15,072.	BFO Switch
S-104		SWITCH, ROTARY: sectional type; 4 sections 3 switching positions max; adjustable stop; non-pile-up type; rated 125V AC @ 3 amp nominal load; shorting type contacts; silver plated brass contacts; phenolic insulation; 1-13/16 in. lg by 1-5/16 in. wd by 1-1/4 in. high; single 3/8-32 thd x 3/8 in. lg mtg bushing; 1/4 in. dia shaft rod by 3/4 in. lg; solder lug type terminals; NEMS-CLARKE part/dwg no. A-15,071.	AM - FM Selector Switch
S-105		Same as S.103 except NEMS-CLARKS part/dwg no. A-15,074.	Video Bandwidth Switch

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
S-106		SWITCH, ROTARY: sectional type; 1 section, 5 switching positions max; adjustable stop; non-pile-up type; rated 125V AC @ 3 amp nominal load; shorting type contacts; silver plated brass contacts; phenolic insulation; 11/16 in. lg by 1-5/16 in. wd by 1-1/4 in. high; single 3/8-32 thd by 3/8 in. lg mtg bushing; 1/4 in. dia shaft rod by 3/4 in. lg; solder lug type terminals NEMS-CLARKE part/dwg no. A-15,073.	Video Bandwidth Switch
T-101		TRANSFORMER, POWER, STEP-DOWN AND STEP-UP: Fully enclosed metal case; 2 primary windings; each winding 115V AC, 50 to 400 cycles, single phase; sec no. 1-530V ct, 120 ma; sec no. 2 - 6.3V, 3.5 amp; sec no. 3-5.0V, 2.0 amp; sec no. 4-10.8V, 1.2 amp, 1000V insulation; air cooled varnish impregnated; 4-1/4 in. high; 13 pillar type terminals, 5/16 in. dia x 5/16 in. lg; four no. 1/4-20 thd x 5/8 in. lg studs on 2-11/16 in. x 3-5/16 in. mtg centers; NEMS-CLARKE dwg no. AB-14,733-2.	Power Transformer Transformer
T-102		TRANSFORMER, AUDIO FREQUENCY: Plate coupling type; 15,000 ohms primary impedance; secondary no. 1,600 ohms impedance, secondary no. 2, 3.3 ohms impedance 10 ma dc primary current 500V test; fully enclosed steel case; 1-7/8 in. lg x 1-3/4 in. wd x 2-11/16 in. high; 1 W max audio operating level; 6 to 1 turns ratio; response less than 3 db down; 100 to 30,000 cycles; 6 solder lug terminals located on end; four no. 6-32 thd mtg studs on 1-1/4 in. x 1-3/8 in. mtg center; varnish impregnated coil; NEMS-CLARKE part/dwg B-14,487.	Audio Transformer Transformer
T-301		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning devices and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; four pin type term; NEMS-CLARKE part/dwg no. AB-14,796.	I.F. Transformer
T-302		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; four pin type term; NEMS-CLARKE part/dwg no. AB-14,794.	I.F. Transformer

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
T-303		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; 4 pin type term; NEMS-CLARKE part/dwg no. AB-14,797	I.F. Transformer
T-304		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; four pin type term; NEMS-CLARKE part/dwg no. AB-14,795	I.F. Transformer
T-305		Same as T-303	I.F. Transformer
T-306		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; 4 pin type terminals; NEMS-CLARKE part/dwg no. AB-14,793	I.F. Transformer
T-307		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; 2 phenolic coil forms; 2 powdered iron cores; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; 4 pin type terminals; NEMS-CLARKE part/dwg no. AB-14,799	I.F. Transformer
T-308		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc peak frequency; shielded; 1 in. lg by 1 in. wd by 1-7/8 in. high excluding terminals, tuning devices and mtg attachments; 2 phenolic coil forms; 2 powdered iron cores; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; five pin type term; NEMS-CLARKE part/dwg no. B-14,976	I.F. Transformer
T-309		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,098	I.F. Transformer
T-310		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,101	I.F. Transformer
T-311		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,103	I.F. Transformer

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
T-312		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,100	I.F. Transformer
T-313		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,102	I.F. Transformer
T-314		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,104	I.F. Transformer
T-315		Same as T-301 except per NEMS-CLARKE part/dwg no. AB-15,099	I.F. Transformer
T-316		TRANSFORMER, INTERMEDIATE FREQUENCY: 21.4 mc. peak frequency; shielded; 1 in. lg x 1 in. wd x 1-7/8 in. high excluding terminals, tuning device and mtg attachments; phenolic coil form; powdered iron core; iron core tuning; mtd by 2 spade bolts spaced 1 in. C to C; four pin type term; NEMS-CLARKE part/dwg no. AB-14,798-2.	I.F. Transformer
V-101	1	TUBE, ELECTRON: glass envelope; full-wave, high vacuum rectifier; type 5R4WGA	Rectifier
V-102	1	TUBE, ELECTRON: glass envelope; two element; cold cathode; voltage regulator; Type OA2	Voltage Regulator
V-103		Same as V-102	Voltage Regulator
V-104	1	TUBE, ELECTRON: glass envelope; twin diode; type 6AL5	AGC Delay Diode
V-105		TUBE, ELECTRON: glass envelope; twin triode; type 12AU7	Squelch
V-106		Same as V-105	1st video amplifier
V-107		Same as V-105	Audio Amplifier
V-108		Same as V-105	Video Cathode Follower Output
V-201		TUBE, ELECTRON: glass and metal envelope; planar triode; Western Electric type 6280	1st R.F. Amplifier
V-202	1	TUBE, ELECTRON: glass envelope, UHF amplifier triode; type no. 6J4 (use CBS or Sylvania only)	2nd R.F. Amplifier

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
V-203	1	TUBE, ELECTRON: glass envelope; RF amplifier pentode; type no. 6AK5	Mixer 21.4 mc
V-204		TUBE, ELECTRON: glass envelope; medium mu triode; type no. 6AFA (RCA)	Local Oscillator
V-301		TUBE, ELECTRON: glass envelope IF amplifier; type 6DC6	1st I.F. Amplifier 21.4 mc
V-302		Same as V-301	2nd I.F. Amplifier 21.4 mc
V-303		TUBE, ELECTRON: glass envelope; high frequency RF amplifier; type 6CB6	3rd I.F. Amplifier 1st Limiter FM 21.4 MC
V-304		Same as V-203	AM Detector; 2nd Limiter FM 21.4 MC
V-305		Same as V-104	Discriminator
V-306	1	TUBE, ELECTRON: glass envelope; sharp cutoff pentode; type 6AU6	Crystal Controlled 2nd Conversion Oscillator 22.4 mc
V-307	1	TUBE, ELECTRON: glass envelope, semi-remote cut-off pentode; type 6BA6	1st I.F. Amplifier 1 mc
V-308		Same as V-203	Mixer 1 mc
V-309		Same as V-307	L.F. Amplifier 1 mc
V-310		Same as V-104	AM & AGC Detector
V-311		Same as V-303	BFO 1 mc
V-312		Same as V-303	BFO 21.4 mc
W-101	3	CORD, POWER: consists of P-103 and P-109 connected by 10 feet of cable, Belden type 8453, per NEMS-CLARKE part/dwg no. A-17,555	Power Input Cord

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
XC-104	1	SOCKET, ELECTRON TUBE: Octal; silver plated beryllium copper contacts; molded low loss composition body; 11/16 in. high x 1-3/8 in. wd x 1-7/8 in. lg; solder tab type terminals 4 solder tab type grounding lugs; round body hole 1-1/8 in. dia required; 2 mtg holes, 0.156 in. dia, spaced 1.500 C to C; type no. TS101P01	Socket for C-104
XF-101		FUSEHOLDER: extraction post type; rated 15 amp, 250V; accommodates 1 cartridge type fuse w/ferrule terminals, 1/4 in. dia x 1-1/4 in. lg; plastic body; silver plated brass contacts; 3/4 in. dia x 1-3/4 in. lg; 2 solder lug type terminals; single 1/2 in. dia mtg hole; Bussman part no. HKP.	Holder for F-101
XF-102		Same as XF-101	Holder for F-102
XI-101		LIGHT, INDICATOR: 5/8 in. dia, smoothface, frosted back, red lens, screw type lens mtg; accommodates 1 min. bayonet base T-3-1/4 size lamp; brass, nickel-plated shell; 1 in. dia x 2 in. lg; single 11/16 in. dia mtg hole; 5/16 in. max panel thk; lamp replaceable from front; 2 solder lug terminals; located on back, insulated from frame; Dialco part no. 81410-111	Socket for I-101
XK-101	1	SOCKET, ELECTRON TUBE: 9 pin miniature; Elco type BR-283-BC	Socket for K-101
XV-101		Same as XC-104	Socket for V-101
XV-102	1	SOCKET, ELECTRON TUBE: 7 pin miniature; Elco part BR-151-BC	Socket for V-101
XV-103		Same as XV-102	Socket for V-101
XV-104		Same as XV-102	Socket for V-101
XV-105		Same as XK-101	Socket for V-101
XV-106		Same as XK-101	Socket for V-101
XV-107		Same as XK-101	Socket for V-101
XV-108		Same as XK-101	Socket for V-101

REF. DESIG.	NOTES	NAME AND DESCRIPTION	LOCATING FUNCTIONS
XV-201		SOCKET, ELECTRON TUBE: 3 contact; silver plated, copper base alloy contacts; laminated plastic body; 1/8 in. thk x 1-1/4 in. dia; solder tab type terminals; rd body hole 7/8 in. dia required; 3 mtg holes, 1/8 in. dia, spaced 120° apart on 1 in. dia circle; provision for mtg tube shield not provided; no tube retaining device included; accommodates W. E. type 416B tube; Cinch part no. 14F14078.	Socket for V-101
XV-202		Same as XV-1ϕ2	Socket for V-101
XV-203		Same as XV-202	Socket for V-101
XV-204		Same as XV-202	Socket for V-101
XV-301		Same as XV-102	Socket for V-101
XV-302		Same as XV-102	Socket for V-101
XV-303		Same as XV-102	Socket for V-101
XV-304		Same as XV-102	Socket for V-101
XV-306		Same as XV-102	Socket for V-101
XV-306		Same as XV-102	Socket for V-101
XV-307		Same as XV-102	Socket for V- 101
XV-308		Same as XV-102	Socket for V-101
XV-309		Same as XV-102	Socket for V-101
XV-310		Same as XV-102	Socket for V-101
XV-311		Same as XV-102	Socket for V-101
XV-312		Same as XV-102	Socket for V-101
XY-301		SOCKET, CRYSTAL: 2 contact; glazed steatite L4 or better; DC-200 impregnated; contacts spaced. 486 in. C to C; accepts pins .050 in. dia by .248 lg; phosphor bronze contacts; E. F. Johnson part no. 126-105	Socket for Y-301
Y-301		CRYSTAL UNIT, QUARTZ: overtone mode; 10,000 - 25,000 mc frequency range ± 0.005; − 55° to + 90° C operating temperature range; static crystal unit; parallel resonance; plug-in type; pins 0.50 dia by .486 C to C; type no-CR-33/U, McCoy Electronics part no. MS-91388	Crystal for Crystal Oscillator

SECTION 4

STOCK NUMBER IDENTIFICATION

This section consists of a list of Federal Stock Numbers. For identification of the reference designation, refer to Section 3, Maintenance Parts list. The following support phrases apply, as referenced, to the proceeding parts list (Section 3) and to this section:

Note 1 - Replacement Use
Note 2 - For Reference Only
Note 3 - Assembled from Component Parts.

SYMBOL NUMBER	FEDERAL STOCK NUMBER	SYMBOL NUMBER	FEDERAL STOCK NUMBER
101-499	F5895-543-1151	C-232	N5910-665-4028
B-101	N4140-204-3565	C-233	N5910-643-8653
C-101	N5910-553-5721	C-234	N5910-264-9476
C-103		C-246	*N5910-195-4549
C-104 A, B	*N5910-179-0505	C-247	*N5910-256-4959
C-105	N5910-644-3543	C-248	N5910-256-4269
C-106	N5910-270-9088	C-251	N5910-299-2285
C-108	*N5910-186-9425	C-252	N5910-666-0442
C-109	N5910-270-4836	C-304	N5910-228-5976
C-110	*N5910-190-8060	C-308	*N5910-666-8903
C-111	*N5910-636-2080	C-311	*N5910-557-6134
C-112	*N5910-270-3196	C-314	N5910-538-1326
C-113	N5910-666-7153	C-320	N5910-553-7161
C-114	*N5910-666-8906	C-326	N5910-244-1617
C-116	N5910-249-5444	C-327	*N5910-644-0590
C-119	N5910-643-9176	C-328	N5910-553-7160
C-217	N5910-643-9149	C-344	N5910-666-6767
C-218	*N5910-643-8980	C-346	N5910-553-7163
C-219	*N5910-100-5769	C-354	N5910-666-6215
C-220	N5910-644-6433	C-356	N5910-538-1328
C-222	N5910-644-6372	C-357	*N5910-644-6668
C-223	*N5910-161-1067	C-364	*N5910-191-3783
C-224	N5910-644-6325	C-371	*N5910-264-9444
C-227	N5910-643-9306	C-372	N5910-636-2077
C-230	*N5910-195-5188	C-375	N5910-276-6887
C-231	*N5910-112-8421	C-378	N5910-264-9426
		C-384	N5910-553-7162

*Replacement Use (Note 1)

SYMBOL NUMBER	FEDERAL STOCK NUMBER	SYMBOL NUMBER	FEDERAL STOCK NUMBER
C-391	N5910-229-1753	L-207	Note #2
C-392	*N5910-256-5569	L-208	N5950-647-8915
C-393	*N5910-666-6187	L-211	N5950-645-2479
C-395	N5910-666-6579	L-301	N5915-643-8375
C-396	N5910-556-9359	L-302	Note #2
C-397	*N5910-666-6220	L-303	Note #2
C-398	*N5910-256-1586	L-304	N5950-593-8592
F-101	N5920-296-3392	L-305	Note #2
F-102	N5920-284-7734	L-307	Note #2
I-101	G6240-155-8706	L-308	Note #2
J-101	N5935-258-1734	L-309	Note #2
J-102	*N5935-259-0594	L-310	N5950-645-2474
J-103	N5935-258-1533	L-311	N5950-593-8600
J-104	N5935-197-4331	L-312	Note #2
J-105	*N5935-201-5983	L-313	Note #2
J-107	*N5935-192-4789	L-314	Note #2
J-108	*N5935-636-8293	L-315	Note #2
J-201	N5935-552-7976	L-316	Note #2
J-301	*N5895-343-9641	L-317	Note #2
K-101	N5945-557-1955	L-318	Note #2
L-101	N5950-593-8593	L-319	Note #2
L-103		L-321	Note #2
L-104	N5950-593-8590	L-322A, B	Note #2
L-201	N5950-647-8918	L-323	N5950-593-8591
L-202	N5950-647-8914	L-324	Note #2
L-204	Note #2	L-326 A,B	Note #2
L-205	N5905-593-8601	L-327	N5950-556-9373

*Replacement Use (Note 1)

SYMBOL NUMBER	FEDERAL STOCK NUMBER	SYMBOL NUMBER	FEDERAL STOCK NUMBER
LS-101	*N5965-510-0524	R-122	*N5905-243-6821
M-101	*N6625-635-4203	R-123	*N5905-279-3506
M-102	*N6625-635-4132	R-125	*N5905-185-8510
O-101	N5355-644-1196	R-127	*N5905-501-5184
O-109	N5355-558-2430	R-129	*N5905-195-6806
P-103	N5935-295-5059	R-132	*N5905-299-2036
P-104	N5935-185-9627	R-133	*N5905-279-1719
P-109	N5935-636-7145	R-136	*N5905-279-1878
P-201	*N5935-258-4422	R-138	*N5905-279-1867
P-202	*N5935-173-5895	R-139	*N5905-279-3497
R-101	*N5905-186-1237	R-201	*N5905-256-0415
R-102	*N5905-101-7196	R-202	*N5905-190-8889
R-103	N5905-101-5562	R-203	*N5905-239-0579
R-104	*N5905-299-2030	R-204	*N5905-279-3496
R-105	*N5905-192-9816	R-205	*N5905-279-2530
R-106	*N5905-279-2665	R-206	*N5905-279-2650
R-107	*N5905-192-0379	R-207	*N5905-299-2035
R-109	*N5905-254-9201	R-208	*N5905-252-5434
R-110	*N5905-279-2515	R-211	*N5905-195-9482
R-111	*N5905-192-0390	R-212	*N5905-195-9483
R-112	*N5905-195-6761	R-213	*N5905-192-4504
R-113	*N5905-195-6754	R-215	*N5905-279-3513
R-114	*N5905-190-8887	R-217	*N5905-643-6325
R-117	*N5905-239-0560	R-218	*N5905-299-2048
R-118	*N5905-171-2004	R-219	*N5905-195-6761
R-120	*N5905-268-2533	R-306	*N5905-185-8510
R-121	*N5905-192-0667	R-307	*N5905-279-1894

***Replacement Use (Note 1)**

SYMBOL NUMBER	FEDERAL STOCK NUMBER	SYMBOL NUMBER	FEDERAL STOCK NUMBER
R-316	*N5905-192-0649	T-311	N5901-593-8596
R-319	*N5905-195-9483	T-312	N5950-593-8594
R-324	*N5905-192-3987	T-313	N5950-593-8597
R-326	*N5905-221-5848	T-314	N5950-593-8598
R-329	*N5905-185-6713	T-315	N5950-593-8602
R-331	*N5905-279-3496	T-316	N5950-647-8595
R-335	*N5905-171-1998	V-101	*N5960-262-0148
R-339	*N5905-279-3504	V-102	*N5960-262-0964
R-340	*N5905-279-1754	V-104	*N5960-262-0185
R-352	*N5905-101-7586	V-105	N5960-166-7663
S-101	*N5930-050-2627	V-201	N5960-636-2457
S-102	*N5930-229-3390	V-202	*N5960-262-0159
S-103	N5930-556-1178	V-203	*N5960-262-1357
S-104	N5930-556-1181	V-204	N5960-636-1140
S-105	N5930-553-7363	V-301	N5960-548-5068
S-106		V-303	N5960-230-5307
T-101	N5950-645-0188	V-306	*N5960-262-0152
T-102	N5950-699-6403	V-307	*N5960-193-5139
T-301	N5950-647-8912	W-101	Note #3
T-302	N5950-647-8916	XC-104	*N5935-160-1364
T-303	N5950-648-0092	XF-101	N5920-280-4039
T-304	N5950-647-8911	XI-101	N6210-233-5321
T-306	N5950-647-8913	XK-101	*N5935-201-8529
T-307	N5950-647-8596	XV-102	*N5935-259-1944
T-308	N5950-647-8594	XV-201	N5935-666-1579
T-309	N5950-593-8599	XY-301	N5935-636-8408
T-310	N5950-593-8595	Y-301	N5955-593-5583

*Replacement Use (Note 1)

SECTION 5

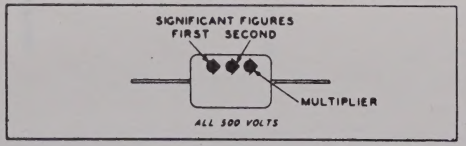
LIST OF MANUFACTURERS

ABBREVIATION	PREFIX	NAME	ADDRESS
Aerovox	CAW	Aerovox Corporation	New Bedford, Mass.
Air Marine		Air Marine Motors, Inc.	Amityville, L.I., N.Y.
Allen Bradley	CB2	Allen Bradley Co.	Milwaukee, Wis.
Amphenol	CPH	American Phenolic Corp.	Chicago, Ill.
Arco		Arco Electronics, Inc.	New York, N.Y.
Belden	CQG	Belden Manufacturing Co.	Chicago, Ill.
Bussman	CFA	Bussman Manufacturing Co.	St. Louis, Mo.
Centralab	CBN	Centralab Division of Globe Union	Milwaukee, Wis.
Chicago Transformer	CTR	Chicago Transformer Div. of Essex Wire Corp.	Chicago, Ill.
Cinch	CMG	Cinch Manufacturing Corp.	Chicago, Ill.
Curtis-Wright		Curtis-Wright Corporation	Carlstadt, N.J.
Dialco	CAYZ	Dial Light Corporation	Brooklyn, N.Y.
Elco	CAVT	Elco Resistors Co.	New York, N.Y.
Erie	CER	Erie Resistor Corp.	Erie, Pa.
GE	CG	General Electric Co.	Cleveland, Ohio
Hubbell	CHU	Harvey Hubbell, Inc.	Bridgeport, Conn.
IPC	CARO	Industrial Products Co.	Danbury, Conn.
E. F. Johnson	CEF	E. F. Johnson Co.	Waseca, Minn.
Jones	CJC	Howard B. Jones Cinch Mfg. Corp.	Chicago, Ill.
Mallory	CMA	P. R. Mallory & Co., Inc.	Frankfort, Ind.
Marion	CMY	Marion Electric Instrument Co.	Manchester, N. H.
McCoy		McCoy Electronics Co.	Mt. Holly Springs 1, Pa.
Metal Process		Metal Process Co.	New York 28, N.Y.
Molded Insulation	CMI	Molded Insulation Co.	Philadelphia, Pa.

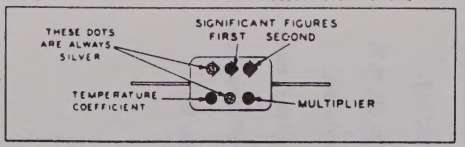
ABBREVIATION	PREFIX	NAME	ADDRESS
NEMS	CN	NEMS-CLARKE Co.	Silver Spring, Md.
Ohmite	COM	Ohmite Manufacturing Co.	Chicago, Ill.
Phelps-Dodge		Phelps-Dodge	Washington, D. C.
Pyramid		Pyramid Electric Co.	North Bergen, N.J.
RCA		Radio Corp. of America	Harrison, N.J.
Smith, H.H.		Smith, Herman H.	Brooklyn 10, N.Y.
Speer	CPQ	Speer Resistor Corp.	St. Mary's, Pa.
Sprague	CSF	Sprague Electric Co.	North Adams, Mass.
Stackpole	CSA	Stackpole Carbon Co.	St. Mary's, Pa.
Switchcraft	CBIM	Switchcraft, Inc.	Chicago, Ill.

CAPACITOR COLOR CODES

RMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS



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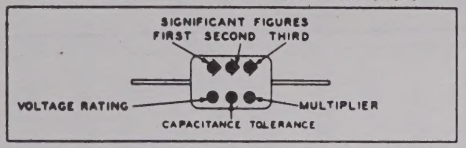

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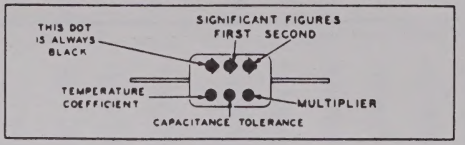
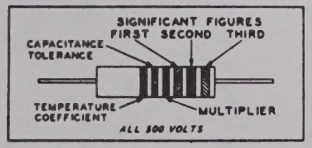


RMA COLOR CODE FOR TUBULAR CERAMIC-DIELECTRIC CAPACITORS



JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

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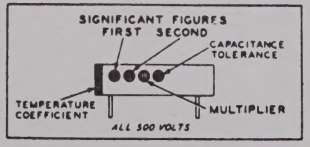

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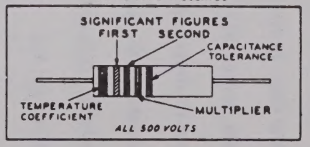


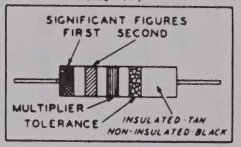
RMA: RADIO MANUFACTURERS ASSOCIATION
JAN: JOINT ARMY-NAVY

RESISTORS				CAPACITORS				
				MULTIPLIER				
TOLERANCE	MULTIPLIER	SIGNIFICANT FIGURE	COLOR	RMA MICA AND CERAMIC-DIELECTRIC	JAN MICA AND PAPER-DIELECTRIC	JAN CERAMIC DIELECTRIC	VOLTAGE RATING	TEMPERATURE COEFFICIENT
	1	0	BLACK	1	1	1		A
	10	1	BROWN	10	10	10	100	B
	100	2	RED	100	100	100	200	C
	1,000	3	ORANGE	1,000	1000	1000	300	D
	10,000	4	YELLOW	10,000			400	E
	100,000	5	GREEN	100,000			500	F
	1,000,000	6	BLUE	1,000,000			600	G
	10,000,000	7	VIOLET	10,000,000			700	
	100,000,000	8	GRAY	100,000,000		0.01	800	
	1,000,000,000	9	WHITE	1,000,000,000		0.1	900	
5	0.1		GOLD	0.1	0.1		1000	
10	0.01		SILVER	0.01	0.01		2000	
20			NO COLOR				500	

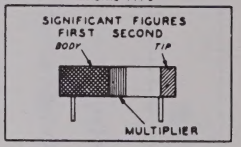
RESISTOR COLOR CODES

RMA COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE

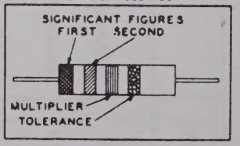


RADIAL TYPE

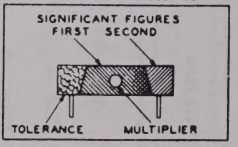


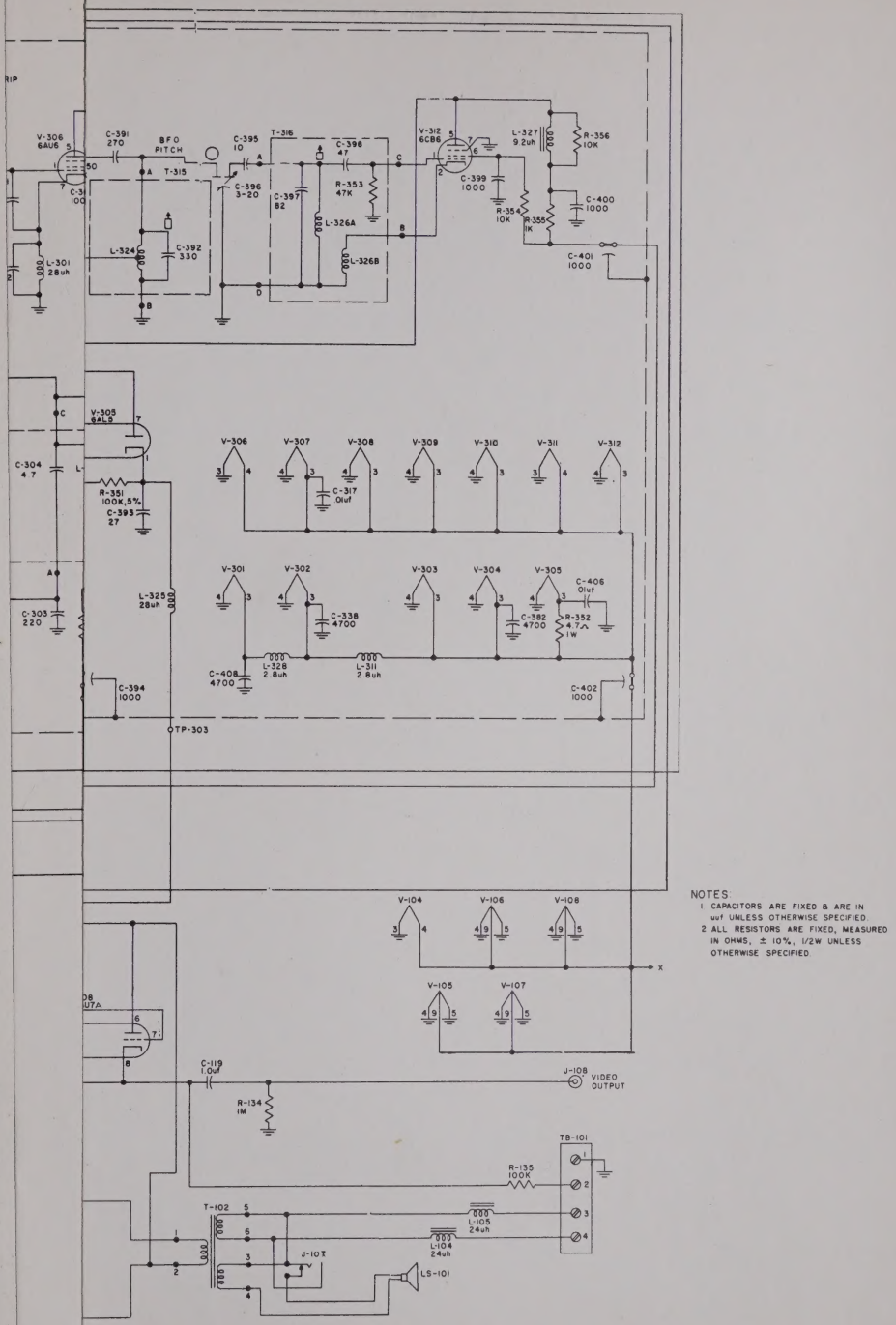
JAN COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE INSULATED



RADIAL TYPE NON-INSULATED



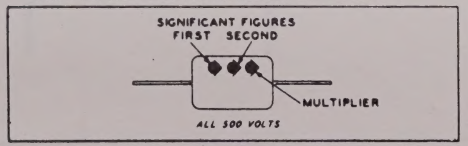


NOTES:
1. CAPACITORS ARE FIXED & ARE IN uuf UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE FIXED, MEASURED IN OHMS, ± 10%, 1/2W UNLESS OTHERWISE SPECIFIED.

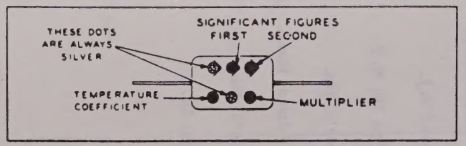
Schematic Diagram, R-839/FLR-2 Receiver

CAPACITOR COLOR CODES

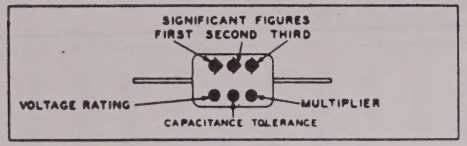
RMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



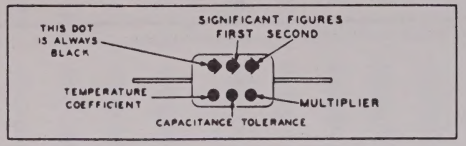
JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS



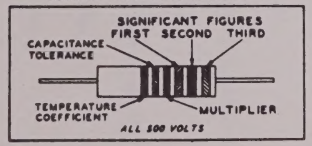
RMA 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

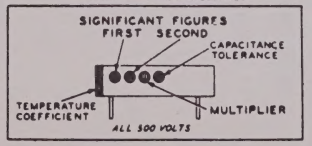


RMA COLOR CODE FOR TUBULAR CERAMIC-DIELECTRIC CAPACITORS

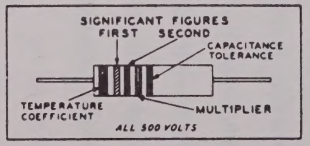


JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

RADIAL TYPE NON-INSULATED



AXIAL TYPE INSULATED



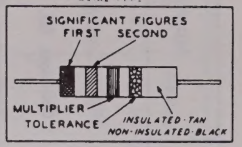
RMA: RADIO MANUFACTURERS ASSOCIATION
JAN: JOINT ARMY-NAVY

RESISTORS		CAPACITORS						
				MULTIPLIER				
TOLERANCE	MULTIPLIER	SIGNIFICANT FIGURE	COLOR	RMA MICA AND CERAMIC-DIELECTRIC	JAN MICA AND PAPER-DIELECTRIC	JAN CERAMIC DIELECTRIC	VOLTAGE RATING	TEMPERATURE COEFFICIENT
	1	0	BLACK	1	1	1		A
	10	1	BROWN	10	10	10	100	B
	100	2	RED	100	100	100	200	C
	1,000	3	ORANGE	1,000	1000	1000	300	D
	10,000	4	YELLOW	10,000			400	E
	100,000	5	GREEN	100,000			500	F
	1,000,000	6	BLUE	1,000,000			600	G
	10,000,000	7	VIOLET	10,000,000			700	
	100,000,000	8	GRAY	100,000,000		0.01	800	
	1,000,000,000	9	WHITE	1,000,000,000		0.1	900	
5	0.1		GOLD	0.1	0.1		1000	
10	0.01		SILVER	0.01	0.01		2000	
20			NO COLOR				500	

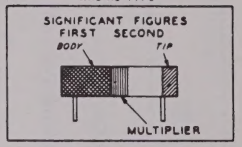
RESISTOR COLOR CODES

RMA COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE

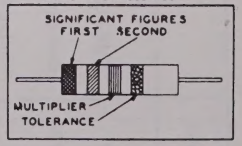


RADIAL TYPE

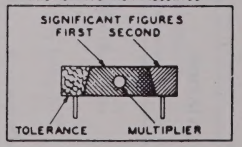


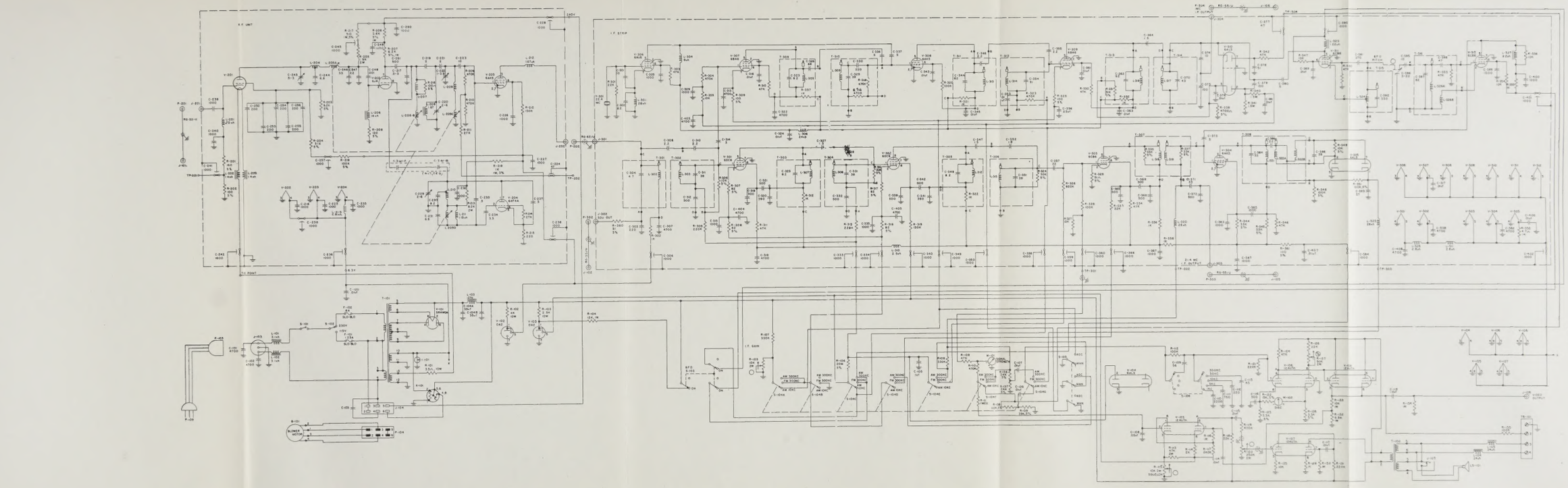
JAN COLOR CODE FOR FIXED COMPOSITION RESISTORS

AXIAL TYPE INSULATED



RADIAL TYPE NON-INSULATED





Schematic Diagram, R-839/FLR-2 Receiver

NOTES:

NOTES: